The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 721.—Vol. XIX.] LONDON, SATURDAY, JUNE 16, 1849. [Price 6d.

TO ENGINEMAKERS, BOILERMAKERS, IRONFOUNDERS, AND IRONMASTERS IN GENERAL.

MR. G. O. BROWN begs to announce that he has received instructions from the proprietors of MILTON IRON-WORKS, near BARNSLEY, to submit to PUBLIC COMPETITION, BY AUCTION, on Monday, the 25th day of June next, and following days (Saturdays and Sundays excepted), until the whole are sold, at the WORKS, the WHOLE OF THEIR

EXTENSIVE STOCK

Of enginemakers', boilermakers', ironfounders', fitters', and turners' tools, 30 hearths of smiths' tools complete, steam-engines, slotting machine, drilling machine, 2 railway wheel lathes, boiler plate bending machine, cupolas, fans, and shafting, screwing and nut machine, a large pipe proving machine, and various other machinery suitable for the iron trade, 10 double and single purchase crabs, various blocks and ropes, metal and other cranes, 2 road-weighing machines, 2 filling machines, and one smaller weighing machine, a large strong fly punch, a set of large three legs, crab and breaking ball, 600 tons of forge pig and refined plate metal, 100 tons of bar and rod-iron (various sizes), a quantity of English oak and other timber, the whole of the office furniture, fittings, and fixtures, which are very good and complete, together with

A FIRE-BRICK FURNACE LINING,

complete; a quantity of seasoned hearthstones and damstones, and a great variety of other articles, which cannot be enumerated here, but which will be particularised in catalogues before the sale.

Mr. G. O. BROWN has also received instructions to OFFER FOR SALE, BY PUBLIC AUCTION, at the same time and place as above (unless a treaty be concluded previously by private contract), all the STEAM-ENGINES, CUPOLAS, MACHINERY, pipe-proving engines, cranes, wood and iron models and patterns, metal casting boxes, core barrels, drawing and working plans, lately used by Messrs. Graham, in carrying on their extensive Foundry and Engine Manufactory at Milton Iron-Works.

As the casting and engine department will not in future be carried on at the Milton Iron-Works, a LEASE will be GRANTED to any eligible party applying for a plot of ground near the Elsecar Colliery, and adjacent to the Dearne and Dove Canal and South Yorkshire Railway.

Application to be made to treat by private contract for the last-mentioned articles to Mr. Newman, of Darley Hall, near Barnsley; or to Mr. Woodhouse, of Overseal, near Ashby-de-la-Zouch.

LEAD and SILVER MINES in the Counties of NORTHUMBERLAND and DURHAM.

MR. CHARLES BROUGH will SELL, BY AUCTION, on Tuesday, the 3d day of July, 1849, at the Crown and Thistle Inn, NEWCASTLE-UPON-TYNE, at One for Two o'clock,

1st.—All those valuable and current-going LEAD and SILVER MINES, belonging to the Bulbeck Lead Company, called SILVER TONGUE, in the county of NORTHUMBERLAND, and HYSOP, in the county of DURHAM, with the ENGINES, for pumping and for washing the ores, OFFICES, COTTAGES, MINE SHOPS, MATERIALS, and UTENSILS belonging to the same, situated upon the River Derwent, in the immediate vicinity of Shotley-bridge, about 16 miles from Newcastle-upon-Tyne, and near the Wear Valley Railway.

These mines are divided from each other by the River Derwent, which here forms the boundary between the counties of Northumberland and Durham, but are connected by levels of communication, for the convenience of unwatering the workings, and of washing the produce at central washing floors.

The Silver Tongue Mines are held by lease from the lord of the manor of Bulbeck, and the Hysop Mines from the Dean and Chapter of Durham. The royalty dues payable for the former are highly favourable, and for the latter are moderate. The leases are renewable according to custom. The engines for unwatering the mines, and for crushing and washing the ores, are driven by water, and in the best order and efficiency. The right of working extends over a tract of mining ground through which many veins of lead are known to run. Four only have been partially worked, and yield large quantities of ore, rich in silver, and are converging towards a point of intersection with other veins, where a considerable accumulation of ore is expected. From the known productiveness of the lower strata in the very ancient Derwent Lead Mines, there can be no doubt but they will here be equally productive.

2d.—All that valuable SMELTING MILL, situate at CASTLESIDE, in the immediate vicinity of the above and also other mines, and known as CASTLESIDE SMELTING-MILL, with all the necessary machinery, horizontal chimneys, and every convenience necessary for smelting lead ore. Together with 2 A. 3 R. 2 P., or thereabouts, of FREEHOLD LAND, and 2 A. 2 R. 7 P., or thereabouts, of COPYHOLD LAND.

Mr. William Watson, the agent on the premises, will show the mines, and further particulars may be known, and plans seen, by applying to Mr. John Dolphin, mine surveyor, Hunter House, Hiding Mill, Gateshead; or Mr. John Douglas, No. 12, Westgate-street, Newcastle.

TO IRONMASTERS, FOUNDERS, &c.

MR. W. D. STARLING is instructed to SELL, by PRIVATE CONTRACT, a QUANTITY of OLD RAILS and CHAIRS; also, several LOTS of CONTRACTORS' PLANT.—Application to be made at his office, 13, Change-alley, London, June 14, 1849.

TO BE SOLD, BY PRIVATE TREATY, A VALUABLE TIN and SILVER-LEAD MINE, situate in the parish of CALSTOCK, in the county Cornwall. The sett is extensive, and contains several valuable TIN and SILVER-LEAD LODES, in a beautiful clay-slate strata, which holds out great promise of becoming a rich and lasting mine. The different agents who have inspected the mine speak of them in the most encouraging terms, and strongly recommend the working of them. There are also the requisite mine buildings—viz., counting-house, blacksmiths' and carpenters' shops, material-house, assay office, and the materials on the mine.

The property is held under a lease for 21 years, 20 of which are unexpired, at 1-16th dues.

Detailed particulars may be obtained, either by personal application or by letter (prepaid), to the proprietor, Mr. Wm. Bice, Callington; or at the office of the *Mining Journal*, 26, Fleet-street, London.

TO BE SOLD, BY PRIVATE TREATY, all those MINES of COAL and IRONSTONE, and other the MINERALS lying under an ESTATE situate in the hamlets of CHELL and THURSFIELD, in the parish of WOLSTANTON, in the county of Stafford, called TURNHURST, containing, by a recent admeasurement, 109 acres, statute measure, or thereabouts, with all usual rights of working, getting and taking the same. These mines are of very considerable value, and lie in the midst of a populous neighbourhood, within half-a-mile of Golden Hill, one mile from Tunstall, three from Burslem, five from Newcastle-under-Lyne, and seven from Congleton. They are accessible by good roads on all sides. The Staffordshire potteries are very near them, and the North Staffordshire Railway passes within a short distance from them.

Further particulars may be obtained on application to Messrs. Beamont and Urmson, solicitors, Warrington.

STEAM-ENGINES ON SALE.—No. 1.—A SECOND-HAND DOUBLE POWER CONDENSING MARINE ENGINE, with cast-iron framing and side beams; cylinder 32 inches diameter, 3 feet stroke; air-pump, lined with brass—no boiler; 47-horse power, with 7 lbs. pressure on the square inch, and very suitable for pumping and winding in a colliery, lead mine, or to drive any kind of millwork.

No. 2.—A DOUBLE POWER CONDENSING MARINE ENGINE, quite new, but unfinished, with cast-iron framing and side beams; cylinder 45 inches diameter, 3½ feet stroke; 91-horse power, with 7 lbs. pressure on the square inch—no boiler; and suitable for the same purposes as No. 1.

No. 3.—A DOUBLE POWER CONDENSING LAND BEAM WINDING ENGINE; cylinder 32 inches diameter, 4½ feet stroke; hand gear, with button valves, parallel motion, fly-wheel, waggon boiler, with all its fittings; door, grate, head-plates, &c.; two large cast-iron bell cranks and pedestals, with strong wrought-iron connecting-rods, for pumping water from two lifts of pumps 100 yards deep, two rope wheels, suited for flat chains, apparatus to throw in and out of gear, pit-head pulleys, &c., 25-horse power, with 7 lbs. pressure on the square inch, and suitable for the same purposes as No. 1.

No. 4.—A NEW DIRECT ACTION ENGINE, double power, suitable for a corn-mill, or winding in a coal or lead mine, with improved spring packing for piston; ditto ditto for nozzle valves; cylinder 15 inches diameter, 3½ feet stroke, 26-horse power, with 35 lbs. pressure on the square inch—no boiler.

No. 5.—A DOUBLE POWER LAND BEAM ENGINE; cylinder 20½ inches diameter, 4 feet stroke, slide valve, parallel motion—no boiler, and quite new; 52-horse power, with 35 lbs. pressure on the square inch, and suitable for the same purposes as No. 1.

No. 6.—A DOUBLE POWER BEAM WINDING ENGINE; cylinder 15½ inches diameter, 3½ feet stroke, with a cast-iron portable frame, slide valve, hand gear, parallel motion, flat-rope wheel, spur and pinion wheels for the same; 35-horse power, with 35 lbs. pressure on the square inch—no boiler, and suitable for the same purposes as No. 1.

No. 7.—A SECOND-HAND PUMPING ENGINE, with cylinder 48 inches diameter, 7 feet stroke in the house and the same in the pit, with air-pump, condenser, hand gear, cistern, &c., pumping three lifts of pumps 100 yards; working barrels 14 inches diameter—no boiler; 100-horse power, with 7 lbs. pressure on the square inch.

No. 8.—A NEW DIRECT ACTING DOUBLE POWER HIGH-PRESSURE STEAM-ENGINE; cylinder 9 inches diameter, 2 feet stroke, slide valve, sliding parallel motion, with grate, door, boiler and fittings complete, with winding apparatus and pit-head and pulley, and was lately at work, for about four months, on a pit 100 yards deep; 10-horse power, with 35 lbs. pressure on the square inch.

THREE SECOND-HAND CYLINDRICAL BOILERS, little worse than new, 4½ feet diameter, and 32 feet in length, with spherical ends, and now in thorough repair, and suitable for any of the above engines.

ONE PAIR of 90-horse power SECOND-HAND MARINE BOILERS, that have been working a pair of 45-horse power engines, and are now in thorough repair.

NEW BOILERS, of any shape, can be MADE at a short notice, to suit any of the above engines.

For further information apply to ETTON & CO., Mostyn Foundry, near Holywell, Flintshire.

Contract for Copper.

DEPARTMENT OF THE STOREKEEPER GENERAL OF THE NAVY, Somerset-place, June 7, 1849.

THE COMMISSIONERS FOR EXECUTING THE OFFICE OF LORD HIGH ADMIRAL OF THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND, do hereby give Notice, that, on Tuesday, the 19th inst., at One o'clock, they will be ready to TREAT with such PERSONS as may be willing to CONTRACT for SUPPLYING Her Majesty's Dockyards at CHATHAM and PORTSMOUTH with

THE FOLLOWING QUANTITIES OF

ENGLISH TOUGH CAKE COPPER:

150 Tons to be delivered at CHATHAM, and 50 Tons to be delivered at PORTSMOUTH, *Within Six Weeks of the Date of the Contract.*

A form of the tender may be seen at the said office.—No tender will be received after One o'clock, on the day of treaty, nor any noticed, unless the party attends, or an agent for him, duly authorised in writing.

Every tender must be addressed to the Secretary of the Admiralty, and bear in the left-hand corner the words, "Tender for Copper," and must also be delivered at Somerset-place, accompanied by a letter signed by two responsible persons engaging to become bound with the person tendering in the sum of £4000, for the due performance of the contract.

VALUABLE AND EXTENSIVE MINES OF COAL AND IRONSTONE.

TO BE LET, ON LEASE, on most advantageous terms, the COAL and IRONSTONE under a very large tract of land, in the parish of RUABON in the county of DENBIGH, adjoining the Shrewsbury and Chester Railway.

The proprietors of the ESTATES on which the Ponkey and Aberderfyn Iron-Works were formerly carried on, have made arrangements TO LET BOTH PROPERTIES TOGETHER, which will give the lessee of them facilities to carry on a lucrative business—very rarely to be met with.

The COALS and IRONSTONE on these ESTATES may be raised at very much less than an average cost, and the quantity proved in them (besides what are under a very large portion of one of them, in which there is no doubt they will be found) is estimated will supply iron-works with materials to make 400 tons of pig-iron weekly for upwards of 30 years, as well as 50,000 tons of the much and justly-celebrated Yard and Wall and Bench Coals per annum for sale, for the same period.

Printed particulars of the property, and lithographed plans of the estates, showing the minerals under them, with calculations as to the expense of making iron from them, as compared with that of manufacturing it in Staffordshire, may be had upon application at the office of the *Mining Journal*, 26, Fleet-street; and at J. Boydell's, 54, Threadneedle-street, London; and at Messrs. Longeville and Williams, solicitors, Oswestry.

Oswestry, June 6, 1849.

MINES—SITUATE AT TIVIDALE, BETWEEN OLDBURY AND DUDLEY.

TO BE LET, upon ROYALTY, and entered upon immediately, the MINES of BROOCH COAL, BROKEN THICK COAL, and the LOWER MINES, consisting of Gubben Ironstone, Heathen Coal, New Mine Ironstone, and New Mine Coal, belonging to Messrs. Thomas and Jesse Moore, containing about 69 acres.—To parties desirous of erecting furnaces the above property affords every facility and advantage for establishing such works; and if desired, the proprietors are ready to treat for a SALE of a sufficient quantity of LAND for the site of such works.

The Railways, Machinery, and Colliery Plant, belonging to the estate, and which are now in complete working order, to be taken too in the usual way.

For further particulars apply to Mr. John Jones, mine agent, Tipton.

TO COAL, COPPER, IRON, CHEMICAL, and other MANUFACTURING COMPANIES.

TO BE LET, ON LEASE, for a term of years, as may be agreed on, a most extensive COAL-FIELD, of the first quality; a FARM, of 240 ACRES of GRASS LAND, with a good commodious DWELLING-HOUSE and attached OFFICES, WALLED GARDEN, STABLING for 50 or 60 horses, from 20 to 30 WORKMEN'S COTTAGES and GARDENS, most eligible sites for the erection of Copper, Iron, Chemical, and other Manufactories, situate at Neath Abbey, in the county of Glamorgan, being close to the navigable river Neath, and only five miles from Swansea.

Mr. W. Hunter, at Briton Ferry, near Neath, will show the lands and coal; for particulars apply to Messrs. Adam Murray and Son, surveyors and land agents, 35, Cravenstreet, Strand, London.

DUISBURG IRON-WORKS AND MINES,

IN WESTPHALIA, CLOSE TO THE RHINE.

Managed in England according to the principles of the "Cost-book System," and in Prussia as a *Société in Commandite*, under laws limiting the liability of the shareholders to their personal subscription.

Company's Offices, 28, Moorgate-street, City.

GROWA SLATE COMPANY,

TREVALGA, CORNWALL.

6000 parts, or shares, of £5 per part, or share (all paid), whereof 2300 parts, or shares, are offered to the public.

NOW IN WORK ON THE "COST-BOOK" PRINCIPLE.

The QUARRY is situated on the CLIFFS, within one mile of the port of Boscastle—vessels load at the quarry during three-fourths of the year.

The SLATE forms a remarkable exception to the general constitution of this mineral; and whilst its applicability to the several purposes of roofing, flooring, and the usual adaptations of the grey, blue, and other slates, a new series of utilities has been developed to the directors (by a gentleman who has, in consequence, been appointed superintending engineer to the company), which will extend its application in a variety of preparation to an extensive and completely novel character of uses.

A PATENT is in course of completion, for the purpose of securing to the shareholders in this undertaking the exclusive benefits to be derived from one of the most attractive discoveries of the present age.

Prospectuses, and all other information, may be obtained at the offices of the company 57, Threadneedle-street, where specimens of the slate may be seen; or to the solicitor John Chapple, Esq., 70, A, Aldermanbury. Prospectuses can also be had at the office o, the *Mining Journal*, 26, Fleet-street.

London, May 16, 1849.

WEST PAR CONSOLIDATED TIN AND COPPER MINE COMPANY.

In 1024 shares, of £10 each.—Deposit £5 per share.—No further call required before the 1st June, 1850, if required at all.

DIRECTORS.

GEORGE TATE, Esq., Fulham.
J. W. WELBORNE, Esq., Purser, 38, Albemarle-street, London.
JOHN WODLEY HUGHES, Esq., Gloucester.
WILLIAM GUEST, Esq., Gloucester.

This MINE SETT is held upon the usual conditions of mining, from Col. Carlyon, upon license for a lease of 21 years, at 1-15th dues. It is situate at Tregrehan, in the parish of St. Blazey, Cornwall, and extends on the lodes east and west 500 fathoms; and north and south about three-quarters of a mile, and is a continuation of the present richest and most profitable Tin and Copper Mine in the county of Cornwall; and is also in the centre of mines which have produced enormous profits—viz.: Great Fowey Consols, Old Crennis, East Crennis and Pembroke, Buckler's Old Tin Mine, now part of Charlestown United Mines; and adjoins on the east Par Consols Mine—the shares upon which £5 5s have been paid are now £800, and have been much higher, and the adventurers received £150 per share in dividends last year. Great Fowey Consols has returned £1,764,152 4s. 1d. value in ore since 1815.

REPORT OF CAPTAIN JOEL HITCHENS.

WEST PAR CONSOLS SETT. *Porthpean, May 7, 1849.*

SIR,—Not having time to give the property in question a thorough investigation, I beg to present you with the following remarks, indicative of opinion of the speculation, under these circumstances:—Your sett at Tregrehan is situated in a very favourable locality, being contiguous to, and having some of the same lodes as the well-known Tin and Copper Mines of Par Consols; the sett (West Par) would have been taken up by different influential companies if the grant could have been obtained—parties deeply interested in mining speculations in this neighbourhood, among whom is myself, having a good opinion of the locality. The lodes which are supposed to pass through this sett are worthy the attention of capitalists, as offering every chance of due remuneration for their outlay in its prosecution.

I am, Sir, your obedient servant,

To Mr. John Williams, Bodmin. (Signed) J. HITCHENS.

REPORT OF CAPTAIN HENRY WILLIAMS.

Tregullan, May 5, 1849.

SIR,—I have inspected West Par Consols Sett, and hand you my report. The sett is very extensive, it being about 500 fathoms on the line of the lodes, and is situate in the vicinity of Charlestown United Mines, Great Crennis, Pembroke and East Crennis, and Par Consols Mines, and is distant from Fowey Consols Mine about 1¼ mile. These mines have been some of the richest mines in the county of Cornwall, and Par Consols Mine continues to be one of the richest Tin and Copper Mines in the county. The large quantities of ores raised, and the large profits realised from these mines is well known—their names are still proverbial. There are several lodes known to be in the sett, some of which are a continuation of the Par Consols lodes (according to tracing longitudinally); they are also parallel with Great Crennis, Pembroke and East Crennis Mines, and but a short distance from either. One of these lodes has been opened, and some good spots of rich grey ore raised. Younder Mine is also in this sett, which is named in history amongst the ancient tin mines in the county; I am not aware that the depth of its workings have been seen by this generation. To work West Par effectually, a powerful steam-engine must be erected, which would enable the adventurers to develope the resources of the mine; and I do not know any untried sett in the county that holds out a better, if an equal, prospect.

I am, Sir, yours obediently,

(Signed) HENRY WILLIAMS.

To J. W. Welborne, Esq., 38, Albemarle-street, London.

Applications for shares to be made at the offices of the company, 25½, Bucklersbury, London, on and after Tuesday next, the 19th of June, between the hours of Eleven A.M. and Two P.M., where prospectuses may be had, plans, reports, and specimens inspected, and every information obtained; also of Mr. John Henwood Williams, Bodmin.

Prospectuses can also be had at the office of the *Mining Journal*, 26, Fleet-st., London.

NOTICE TO THE WORKING COLLIERS OF GLAMORGANSHIRE.—Whereas it has been industriously propagated amongst the workmen by some evil-disposed and unprincipled persons (whose names may probably appear to the public ere long, and be punished for their base conduct), that it is the intention of the STEAM COAL PROPRIETORS in the neighbourhood of ABERDARE to reduce the price for cutting the coal at those works.

We, the contractors for working and delivering the coal from the Duffryn and Abergwawr Collieries, hereby give Notice, that any good steady COLLIERS may have EMPLOYMENT at the same wages as are now given for cutting the Six-foot Vein of Coal—namely, Sixteen-pence per customary ton of 21 cwts., of 120 lbs. to the hundred-weight—payment as usual every fortnight; or, if required, on account every week in cash, and settlement every month in cash; and to prove the sincerity of the proprietors that there is no intention to reduce the wages at either of these collieries, we will engage with the men for 12 months certain, at the present price for cutting the coal.

Application to be made to David Richards or David Jones, contractors for Duffryn Collieries; and to Howell Reynolds, contractor for Abergwawr Colliery.

Aberdare, June 6, 1849.

SWANSEA HARBOUR.—The Treasurer is authorised to RAISE ON BONDS, secured on the revenue of the Swansea Harbour, bearing interest at the rate of 5 per cent. per annum, payable half-yearly, at Swansea or in London, at the option of the holder, any SUMS not less than £100, nor exceeding in the whole £10,000, being part of the sum of £15,600 required for the works of the Corporation Quay, necessary to complete the floating of the town reach.

Application to be made to the Treasurer, at the Glamorganshire Banking Company's office, Swansea.—Reference for any further particulars may also be made to Messrs. Rowland, Hacon, and Rowland, solicitors, 38, Threadneedle-street, London.

LOANS ON DEBENTURES.—The CALEDONIAN RAILWAY COMPANY are prepared to RECEIVE TENDERS OF LOANS, in sums not less than £500.—Applications to be made or addressed to this office.

125, George-street, Edinburgh, May 30, 1849. D. RANKINE, Treasurer.

TO BE LET, for a Term, the LOTHBROKE IRON MINE, containing unlimited quantities of the BLACK and RED HERMATITE ORES—brought up easily by a first-rate water-wheel. The demand for this ore is daily increasing.—Further particulars to be known by letter, addressed to Mr. Charles Dyer, at the Lothbroke Mine, near Dunster, Somerset.

TO BE SOLD (Cheap), a 40-horse HIGH-PRESSURE HORIZONTAL STEAM-ENGINE, quite new; cylinder 24 inches diameter, stroke 4 feet, mounted upon a strong metal box frame.—Apply to Mr. Matthew Smith, Sylvester Works, Sheffield, where the engine may be seen.

FOR SALE,—SHARES in that promising TIN MINE, called RIX HILL (East Crowndale), now making considerable monthly returns. Apply to Mr. William Birdsey, 9, St. Michael's-alley, Cornhill.

MINING OFFICES, THREE KING'S COURT, LOMBARD STREET, LONDON.—Messrs. R. TREDINNICK & CO. beg to draw the attention of capitalists to the DEPRESSED MARKET VALUE of SHARES in ENGLISH and FOREIGN MINES, many of which pay dividends of from 20 to 30 per cent. per annum, whilst those on the eve of so doing are selling at corresponding low prices.—Messrs. T. & Co. continue to DEAL in every description of MINING, RAILWAY, BANKING, INSURANCE, CANAL, and OTHER SHARES.—Statistical information afforded gratuitously upon personal application.—MONEY ADVANCED upon the above securities.

MINING PROPERTY.—Mr. JAMES HERRON, MINE AGENT, 33, CLEMENTS-LANE, LOMBARD-STREET, has received instructions to DISPOSE of SHARES in FIRST CLASS MINES, paying regular dividends, and yielding to the purchaser from 17½ to 25 per cent. upon his outlay. He is also in a position to transact business in the following—viz.: Kirkcudbrightshire, Treleighs, Bedford, Alten, East Tamar, Hmbash, Trethellan, Treviskey, East Pool, Trelawny, Mary Ann, South Tolgus, West Seton, North Pool, West Caradon, West Buller, Stray Park, South Frances, East Wheal Rose, Great Devon Consols, Imperial Brazilian, St. John del Rey, and United Mexican Mines.

MESSRS. JOHN T. TEAGUE AND CO., MINE SHARE-BROKERS, No. 4, KING-STREET, TRURO, CORNWALL, Have BUSINESS to do in the following MINES:—West Caradon, West Buller, Tincroft, Stray Park, East Pool, Carn Brea, West Seton, South Frances, Camborne Consols, Treviskey and Barrier, Wheal Calstock, East Wheal Rose, Wheal Ellen (Redruth), Kingsett and Bedford, Mineral Court, St. Aubyn and Grylls, Bedford United, &c.

MR. C. S. RICHARDSON begs to announce that he has REMOVED his OFFICES from Whitefriars-street, Fleet-street, to 15, *OLD BROAD-STREET, CITY.*

JAMES LANE, MINING SHARE DEALER, 80, *OLD BROAD-STREET, LONDON.*

ADELAIDE CITY AND PORT RAILWAY COMPANY

NOTICE OF SECOND CALL OF TWO POUNDS PER SHARE.

Notice is hereby given, that, pursuant to a resolution of the board of directors, proprietors of shares in this company are requested to pay the SECOND INSTALMENT of TWO POUNDS per share, on each of their respective shares, on or before Thursday, the 12th day of July next, to Messrs. Barnett, Hoare, and Co., bankers, 62, Lombard-street.

By order, H. T. RYDE, Secretary.

34, Broad-street-buildings, Friday, June 1, 1849.

ASTURIAN MINING COMPANY.—Notice is hereby given, that all SHARES in this company on which the CALL, due on the 1st day of March last, has NOT BEEN PAID, were this day DECLARED FORFEITED for non-payment of calls.

By order of the board,

Offices of the Company, 9, Austinfriars, June 8, 1849. K. MACKENZIE, Sec.

ASTURIAN MINING COMPANY.—Notice is hereby given, that the ANNUAL GENERAL MEETING of the registered proprietors of shares in this company will be HELD on Saturday, the 30th day of June inst., at the company's offices, No. 9, Austinfriars, for the purpose of receiving the directors' report, and transacting other business.—The chair will be taken at Two o'clock precisely.

By order of the board, K. MACKENZIE, Sec.

Offices of the Company, 9, Austinfriars, June 15, 1849.

BLAENAVON IRON AND COAL COMPANY.—The INTEREST on the DEBENTURES in this company, payable half-yearly, may be RECEIVED on application at these offices, on and after the 5th July, between the hours of Eleven and Three o'clock.

By order of the board,

Offices, 4, Pancras-lane, June 8, 1849. JAMES BOOTH, Secretary.

RHYMNEY IRON COMPANY.—The HALF-YEARLY GENERAL MEETING of the proprietors of this company will be HELD at the company's offices, 7, Laurence Pountney-hill, on Wednesday, the 20th inst., at One o'clock precisely.

By order of the board,

7, Laurence Pountney-hill, June 1, 1849. T. E. SCUDAMORE, Secretary.

NATIONAL PROVINCIAL BANK OF ENGLAND,

112, Bishopsgate-street, London, June 15, 1849.—The directors of the NATIONAL PROVINCIAL BANK OF ENGLAND hereby give Notice, that a HALF-YEARLY DIVIDEND, at the rate of 6 per cent. per annum, will be PAYABLE on the company's stock, on and after the 16th of July next, when the dividend warrants will be obtained at the company's office, 112, Bishopsgate-street, or at the different branches.

The transfer books will be closed on and after Thursday next, the 21st inst., until the dividend become payable.

By order of the court of directors,

DAN. ROBERTSON, Agent and Manager.

ST. KATHARINE DOCKS.—Notice is hereby given, that a HALF-YEARLY GENERAL MEETING of the proprietors of the ST. KATHARINE DOCKS will be held in the Dock-house, Tower-hill, in the county of Middlesex, on Tuesday, the 17th day of July next, at Twelve o'clock at noon, for the purpose of declaring a dividend on the capital stock of the company for the half-year ending the 30th of June inst.; also for the election, by ballot, of 21 directors for the year ensuing; and that the books of the company will be closed on Saturday, the 23d inst., and opened again on Wednesday, the 25th of July next.

By order of the court,

St. Katharine Docks, June 12, 1849. JOHN HALL, Secretary.

N.B.—The chair will be taken at One o'clock precisely.

TO ENGINEERS AND BOILER MAKERS.—The BIRMINGHAM PATENT IRON TUBE COMPANY MANUFACTURE PATENT LAP-WELDED IRON TUBES (under Mr. R. Prosser's Patent) for Marine, Locomotive, and all Tubular Boilers. Also, TUBES for Gas, Steam, and other purposes. All sorts of IRON GAS FITTINGS.

Works—Smethwick, near Birmingham.

London Warehouse—No. 6, Upper Thames-street.

THE STEAM-ENGINE.—W. BROTHERTON & CO. beg to CALL the ATTENTION of ALL PARTIES EMPLOYING STEAM-POWER to their PATENT PURIFIED OIL for the ECONOMICAL WORKING of the STEAM-ENGINE and other MACHINERY.

The adoption of its use effects a saving of 25 per cent. on the quantity required for lubrication over any other oil; and its properties are such as to greatly preserve the bearings of machinery in general. A trial will prove the fact.

W. BROTHERTON & CO.,

PATENT OIL FACTORY, HUNGERFORD WHARF, CHARING-CROSS, LONDON.

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

This Day	Asiatic—5, New Burlington-street	2 P.M.
Monday	Statistical—12, St. James's-square	8 P.M.
	British Architects—16, Grosvenor-street	8 P.M.
	Chemical—Society of Arts, Adelphi	8 P.M.
Tuesday	Linnean—Soho-square	8 P.M.
	Civil Engineers—25, Great George-street	8 P.M.
Wednesday	Microscopical—21, Regent-street	7 P.M.
	Ethnological—37, Saville-row	8 P.M.
Thursday	Royal—Somerset-house	8½ P.M.
	Antiquaries—Somerset-house	2 P.M.
Friday	Philological—London Library, 12, St. James's-square	8 P.M.
Saturday	Royal Botanic—Inner Circle, Regent's Park	3½ P.M.

ROYAL INSTITUTION.

The consideration of the various effects of different modes of electric discharge formed the subject of Mr. Faraday's sixth lecture, delivered on Saturday last. The discharge of electricity may take place in a variety of ways and imperceptibly, but its effects are most manifest in what is termed the disruptive discharge, when the accumulative force of the electricity breaks through resisting bodies. It has been remarked as a singularity in the electric discharge, that the force seems to act from the centre externally in opposite directions, and in passing through a card, for instance, perforates a hole with a burr on each side; this the advocates of the vitreous and resinous theory of electricity have considered confirmatory of their opinions; but in point of fact, as Mr. Faraday said, all forces moving rapidly in one direction produce the same effect; and specimens were shown of metal penetrated by balls which presented the appearance of a burr on each side. The disruptive discharge occasions a displacement of the particles of the bodies through which the electricity forces a passage, and it is this sudden displacement, or expansion, which occasions the rending effects of lightning, and not the action of the lightning alone, of the nature of which nothing is known. The experiment of the electrical mortar, by which a small cork ball is thrown out by passing the charge of a Leyden jar through the enclosed air, was shown, to illustrate the mechanical effect of the spark on air; and a glass tube, filled with water, was broken and shattered, to show the effect of a shock on fluids. The glass tube was estimated to bear a pressure of five atmospheres, yet the glass was shivered near the fracture in a manner to indicate the great activity of the force by which it had been broken. The rending power of lightning, when passing through the fluid and air vessels of a tree, may, therefore, be conceived to be immense, and among other specimens on the lecture table was a large quantity of small splinters, into which an oak tree had been riven by lightning. To illustrate the heating power of electricity, numerous experiments were made. The firing of gas by a spark from the machine, of powdered resin by the discharge of a Leyden jar, and of a mixture of a chloride with antimony by the same means, were exhibited. Though heat is thus manifestly evolved by electricity, no sensation of heat is experienced when an electric spark or shock is received through the hand, and, as Mr. Faraday demonstrated, ether may be fired by a spark emitted from the finger, and even by ice. Ice, indeed, may in cold weather, when free from moisture, be excited like glass, and will emit sparks that will fire ether. Some curious exemplifications were given of the different results attending the discharge of electricity under various circumstances. Gunpowder, for example, when unconfined, cannot be exploded by an ordinary electric discharge, the effect being merely to disperse the particles of the powder; but when the discharge is made through a wetted string the gunpowder is exploded. A strip of gold leaf was made part of the same circuit with gunpowder, for the purpose of showing the different effects on each when the discharge took place rapidly through wires, and when retarded by interposing an imperfect conductor, like water. When the discharge was made through wires, the gold leaf was deflagrated and the gunpowder dispersed, but not exploded; when a wet string was made part of the circuit, the gunpowder was exploded and the gold leaf was uninjured. Static electricity was used for blasting in mining operations before the mode now adopted for the use of the voltaic battery; for which purpose the wire was ordinarily coated with an insulating substance, to prevent the discharge from taking place through the earth instead of through the wire, but the experiment had succeeded through a length of 150 feet of unprotected wire lying on the grass, proving on a large scale that electricity will traverse a long line of a good conductor in preference to taking a shorter course through an imperfect one. Several illustrations of the preference of electricity to the shortest course were given, by discharging a small battery through strips of gold leaf variously disposed on cards, when it was evident, by the deflagration of the gold, that the electricity had taken the shortest path. There are so many circumstances which vary the discharge of electricity, and thereby alter its effects, that it is extremely difficult to determine the cause of the destructive action of lightning. A comparatively feeble discharge of electricity might in some circumstances do more damage than a more powerful one. In one case which Mr. Faraday said he had observed, a house had been set on fire by the melted globules of a copper bell-wire having fallen on some curtains; now if, in such a case, the discharge had not been interrupted, or had been more powerful, the metal might have been deflagrated and dispersed, and the house would not have been set on fire. The different effects of large and smaller discharges through a wire of the same size were shown; in one case the metal had been just melted, and the globules of it remained on the paper; in the other case the metal had been deflagrated, leaving a broad mark on the paper, but no remains of the metal. The state of the weather may greatly modify the effects of a discharge. When the bricks of a building, for example, are wet, they serve as imperfect conductors of lightning, and may change its rending force into a heating power; and Mr. Faraday, after two or three trials, succeeded in firing, by the discharge of a Leyden jar, gunpowder placed upon a wet brick.

The seventh lecture of the course was delivered by Prof. Faraday, on Tuesday last, on which occasion he was honoured with the presence of Prince Albert, who occupied a chair immediately in front of the lecture table. The light of the electric spark was the subject to which Mr. Faraday almost exclusively directed the attention of his audience, and the room was for nearly the whole time darkened, to show with greater effect the brilliancy of the light and its intense power. In the first place, the power which it possesses of illuminating opaque bodies were shown, by sending sparks and the discharge of a Leyden jar through ivory and eggs, which became as distinctly illuminated as if composed of ground glass, and had been lighted within by a candle. The instantaneous character of the light was exhibited by Prof. Wheatstone's arrangement for ascertaining the duration of the light of an electric spark. A concave mirror was made to revolve with great rapidity, and the flame of a candle was first reflected on a screen, to show that with a continuous light the impression on the retina remains until the circle is completed, and thus a circle of light is represented; but when the electric spark was reflected on the screen the spark only was visible, without any tendency to spread, however rapidly the mirror was revolved. The flame of the candle and the spark were then together reflected on the screen, when the curious effect was seen of a luminous ring of light produced by the flame, in which luminous circle the electric spark appeared brilliantly distinct, as if the mirror had been stationary. The duration of the electric spark had been ascertained in this manner not to exceed the five hundred thousandth part of a second. So powerful, indeed, is the light of the electric spark, said Mr. Faraday, that if it were continued even for a second it would destroy the organs of vision. The light of the electric spark is vastly more intense than what is termed the electric light, the latter being an exhibition of the luminous power in a much lower degree of intensity. Several experiments were shown by passing the electric spark through glass vessels, in which a partial vacuum had been produced. The beautiful flood of purple light that was thus transmitted through a long tube closely resembled the appearance of the Aurora, and Mr. Faraday observed that the identity of Aurora with the electric light had now become firmly established, and most of the glorious phenomena of atmospheric electricity can be imitated on a small scale; showing the transition of the Aurora to a falling star, and a flash of lightning in proportion to the density of the air through which the electricity passes. In a perfect vacuum the electricity is conducted with nearly the same facility as through wires, but its track is marked by beautiful irradiations of purple light. The electric spark is the only light known which has sufficient intensity to restore the luminosity of phosphate of lime. Some of that substance was sprinkled on a hot iron, and it emitted a strong phosphorescent light, which after a short time became extinguished; and Mr. Faraday said nothing could restore this property but exposure to the light of the electric spark, the ordinary electric light being too feeble to have any restorative effect. Mr. Faraday exhibited the power of static electricity to communicate magnetism. By sending the discharge of a Leyden jar through several needles they became magnets, and by reversing the direction of the discharge the poles of the magnets became changed; those ends of the needles which had been north poles becoming south, and the contrary. After the lecture Prince Albert remained some time conversing with Mr. Faraday, and examining the apparatus.

INSTITUTION OF CIVIL ENGINEERS.

June 12.—Joshua Field, Esq. (President), in the chair.

The first paper read was "A description of the Construction of a Collar Roof, with arched trusses of bent timber, at East Horseley Park," by the Right Hon. the Earl of Lovelace, Assoc. Inst. C.E.

The roof, which covered a hall of 56 feet long by 24 feet wide, was described as being sustained by four arched trusses, springing from stone corbels. The ribs of these were each composed of four layers of deals, three inches thick, bent to the required form by steam heat. All the mouldings surrounding the tracery were also bent to the required forms in the same manner, thus giving great strength and lightness, as well as performing the work with greater economy of labour. The tracery was cut out from two thicknesses, half-an-inch each, from tub-stave oak, glued together, with the fibres at right angles to each other, which facilitated the carving, and gave greater strength to the minute tracery. The ceiling was formed of half-inch diagonal boarding, and as the slate battens crossed it in a horizontal direction, the roof was strongly braced against the action of wind, and the staining of the alternate boards gave a pleasing variety of effect.

This kind of construction was first suggested by Colonel Emy, in his work on "Carpentry," but he had applied it to much flatter roofs of large span; whereas Lord Lovelace's intention was to demonstrate its applicability to roofs for edifices in the pointed and Tudor styles, and to show that great advantage would result from bending timbers, rather than cutting them to the requisite forms; that the thrust of the roof might be entirely taken from the upper part of the walls, and carried far down them, and that such a construction might be adopted as would satisfy every condition of solidity, and at the same time admit of considerable decoration.

In the discussion which ensued, the ingenuity of the design and of the mode of execution of the roof were equally approved, and the noble Earl was deservedly complimented for the motives which induced him to bring to the institution the account of one of his works.

The second paper was a "Statement of Observations made on the Initial and Terminal Velocities of Trains in descending Inclined Planes," by Captain W. Moorsom, M. Inst. C.E.

The observations were 82 in number, and were made during the ordinary passing of trains on the Waterford and Kilkenny Railway, the gauge of which is 5 feet 3 inches, over two adjoining inclines, each falling at the rate of 1 in 100 for upwards of 1½ mile, with a short intermediate level between them.

The speeds at which the descent was begun varied from 20 to nearly 44 miles per hour, and the loads varied from 32 to 94 tons.

One of the planes presented for the greater part of its length two curves of a radius of 1½ and 1 1-6th mile respectively, and the other plane was straight for part of its length, but contained a curve of 2½ miles radius. The general results in the more curved plane were, that initial velocities of 20 to 30 miles per hour, at the top of the plane, became terminal velocities of 24 to 28 miles per hour; and on the straighter plane the same initial velocities became terminal between 29 and 31 miles per hour. Again, on the more curved plane, initial velocities between 30 and 40 miles per hour, became terminal at velocities between 29¾ and 31½ miles per hour; and on the straighter plane the same initial velocities became terminal at 30¾ to 33½ miles per hour.

Initial velocities above 40 miles per hour were noted only upon the more curved plane, and became terminal at 30 to 31 miles per hour. There did not appear to be any constant proportion between the load in motion and terminal velocity; but the latter appeared to be dependant more upon initial velocity than upon the weight or character of frontage of the trains.

The general practical conclusion was deduced, that the question of gauge had little or nothing to do with terminal velocity derived from gravity, and that the views generally entertained by engineers, during past years, of the great resistances experienced by trains at high velocities, were borne out by the observations recorded in the paper.

The proceedings of the evening concluded with a paper by Lieut.-Col. Harry D. Jones, R.E., M. Inst. C.E., "Descriptive of the Bridge at Athlone," erected under the authority of the Shannon Commissioners, from the designs of Mr. Rhodes, M. Inst. C.E. The paper described the great difficulties experienced from the rush of water into the coffer-dams, through the porous gravel stratum in which they were placed, and the ingenious modes of overcoming these impediments. The bridge, of three arches of stone and one of iron, the latter having the means of opening for the navigation, was fully described, and was admitted to be not only a beautiful structure, but to have been built for a small sum (about 24,000*l.*), considering its extent. A beautiful set of drawings, and the printed specifications for the work, illustrated the paper.

The paper announced to be read at the meeting of Tuesday, June 19, was "On the employment of High-pressure Steam for Marine Engines," by Mr. John Seward, Mem. Inst. C.E.

SOCIETY OF ARTS.

The annual distribution of prizes given by the Society for the Encouragement of Arts, Manufactures, and Commerce, took place on Thursday last, at the house of the society, in the Adelphi.—H.R.H. Prince Albert, the president, in opening the business, expressed his regret at being prevented, on the last occasion, from fulfilling his duties as president, assured them he had not less the interest of the society at heart, and was most happy in meeting so numerous and highly-respectable an assemblage on the present occasion. He considered the society was making satisfactory progress, and that these distributions of prizes materially advanced the various branches of the arts and manufactures of the country. He then alluded to the two medals which his Royal Highness offered last year on his own account—one for a good cement to bind glass together, as he thought it a matter of great importance that glass should, as much as possible, be substituted for metal in domestic utensils as a matter of cleanliness and health; this medal was not awarded, from want of competition. The other was for an improved system in the production of sugar. His Royal Highness spoke at length on the position of affairs in the West Indian islands, where there was room for much improvement in the economic production of the land, and showed that he was well acquainted with the subject, as well as many others connected with the arts and sciences.—Mr. Scott Russell read the report, which alluded to the rapid and satisfactory progress of the society; the income had increased from 800*l.* to 1600*l.* per annum. The prizes were then awarded, from the list of which we select the following from the sections of fine arts, manufactures, and mechanics:—

Messrs. H. and E. Highton, for several improvements and new principles introduced by them in the construction of electric telegraphs—the large gold medal.

Mr. N. J. Holmes, for his diamond needle, and coil, and lightning conductor for electric telegraphs—the large gold metal.

Mr. W. Peirce, for his pyro-pneumatic stove—the large silver medal.

Mr. Arthur Dunn, for his means of indicating the temperature of the steam, and also of the boilers of steam engines—the large silver medal.

Mr. Haigh, for his water meter—the large silver medal.

Messrs. Terraffe and Willett, for their method of slating roofs—the large silver medal.

Mr. P. Watt, for his method of keeping two forming surfaces moving at required rates, by means of racks and pistons—the silver Isis medal.

Mr. J. A Hatfield, for the improved character of his bronzes, specially exemplified in the "Dying Gladiator"—the gold Isis medal.

The Coalbrookdale Iron Company, for the superiority of their iron castings—the gold Isis medal.

Mr. J. F. Christy, for his specimens of printing on glass with enamelled colours—the large silver medal.

F. Ostier and Co., for their glass manufactures—the large silver medal.

Messrs. A. Pellatt and Co., for their specimens of coloured and cut glass—the large silver medal.

Mr. W. Potts, for his novel union of metal, glass, and porcelain—the large silver medal.

Mr. J. Tennant, for his efforts to promote ornamental art in British marbles—the large silver medal.

Messrs. Halls, for their Florentine Mosaic table top—the large silver medal.

After some conversation, the Chevalier Bunsen prop osed, and Sir E. Codrington seconded, a vote of thanks to Prince Albert, who replied in neat and elegant terms, and the proceedings terminated.

In the evening, a numerous party of the members dined together at the Star and Garter, Richmond, when, in the unavoidable absence of Mr. Webster (one of the vice-presidents), the duties of the chair were very ably conducted by Mr. Winkworth, a member of the council.

After the cloth was removed, the Chairman proposed, in a few appropriate remarks, the health of the Queen, which was most enthusiastically responded to—the whole company singing, in right good style, the national anthem. The chairman then proposed the health of Prince Albert, the president of the society, and also of the Queen Dowager, and the rest of the Royal family, both of which were responded to with the usual marks of loyalty.

The Chairman then proposed the toast of the evening, "Success to the Society of Arts." He entered into a brief but interesting review of the proceedings of the society, and took notice of the great good it had accomplished, in having been the first to bring forward and encourage some of the most distinguished scientific men and most eminent artists of this country. He alluded with much good taste to the different means the society had lately adopted with such success for the encouragement of arts, manufactures, and commerce. He was happy to see the vice-chair filled by Mr. Winsor, one of the oldest members of the society, and whose father was mainly instrumental in introducing the use of gas.

The health of the presidents and council was proposed by Mr. Winsor, and responded to by Mr. Winkworth; the health of Mr. Winsor, by the Chairman; the former returned thanks, and proposed the health of the members of the committees, responded to by Messrs. Barlow and Calthorp. The health of Mr. Whishaw, by Mr. Barlow; he justly attributed to that gentleman much of the success of the society, and lauded him for the great zeal he always evinced for its welfare—sentiments which were received with loud cheers by all present.—Mr. Whishaw acknowledged the compliment in very suitable language, and stated that he always felt the greatest possible interest in the proceedings of the society, and he would continue his best endeavours to promote its success. He believed that the real merit of raising the society to its present proud position was due to the indefatigable exertions of Mr. Webster and one or two other of its staunch friends.

The following toasts were then proposed—"Mr. Scott Russell and Mr. Davenport, the secretary and assistant-secretary"—responded to by the latter.—"Mr. Winkworth, the Chairman," who returned thanks.—"The Visitors present." Mr. Thompson returned thanks.—"The Members of the Society." Mr. J. H. Munchison returned thanks for himself and the other members, and noticed that this society was the oldest in London, with the exception of the Royal Society; and that it was the only scientific society which appeared to attract the special care of royalty, his Royal Highness, the late Duke of Sussex, having been the predecessor of her Majesty's Consort.

The party then broke up, and returned to town, highly delighted with the evening's entertainment, and with the determination to keep up these convivial *reunions*, as being conducive of much good to the society. We regret we have not space to give more at length the many interesting speeches that were made on this occasion.

Dreadful Wounds in a Leg soundly cured by Holloway's Ointment and Pills.—Mr. Henry Grey, typographer, residing at No. 6, Temple-lane, City, states that he suffered the most excruciating pains in his leg for a considerable time, occasioned by an accident which he unfortunately met with; two deep wounds formed in his leg in consequence of it, and although he tried various lotions and ointments, yet all were found entirely useless. He was then recommended by a friend to use some of Holloway's Ointment and Pills, which he did, and in six hours he was greatly relieved, and in about eight days the wounds were soundly healed.—Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.

LIFE ASSOCIATION OF SCOTLAND.

At the tenth annual general meeting of proprietors in this association, recently held in Edinburgh, we find, from the report, that, during the year ending 5th April last, 504 new policies had been issued, comprehending assurances to the amount of 221,238*l.*, the annual premiums being 7027*l.* 16s. 8d., exceeding the transactions of the preceding year by 92,130*l.*, on 196 policies. A branch has been established in London, at 64, Old Broad-street, where the business transacted has considerably exceeded the anticipations of the directors. The usual valuation of the assets and liabilities of the society had been made, and a return is to be made, out of the surplus, to the holders of policies effected on or before 5th April, 1845, of 35 per cent., or upwards of one-third of the current year's premiums. This is the distinguishing feature of the institution; on the 5th April in each year the precise state of the affairs is ascertained, and the profits arising in the course of business is enjoyed by the policy-holders of five years' standing during life. Thus, in 1845, 1846, and 1847, the returns amounted to 30 per cent. of the entire premiums paid. In 1848 and 1849 they have amounted to 35 per cent.; a policy-holder paying a premium of 100*l.* received back from the office 35*l.*; another paying 50*l.* received back 17*l.* 10s., the effect being to reduce premiums of 100*l.* to 65*l.*, of 50*l.* to 32*l.* 10s., and others in the same proportion. From the tables of rates of assurance, with or without share of surplus, the advantages of the former are in the following proportions:—On a life of 20, with share of surplus, the premium has become reduced from 1*l.* 17s. to 1*l.* 4s. per annum; while without share the premium paid annually is 1*l.* 12s. 8d., and at 45 the payment annually is reduced from 3*l.* 17s. 2d. to 2*l.* 10s. 2d.; while without share of surplus it continues at 3*l.* 8s. 1d. The principle is decidedly good, and offers great inducement to join the institution, which is, we believe, the only assurance office in Scotland which has adopted the plan.

LIFE ASSURANCE.*

Notwithstanding the extraordinary increase of associations for the assurance of human life, and the correspondingly higher interest which has been awakened to the principle during the past 20 years, there has hitherto been no work upon the subject written in an intelligible and easy style, by which information on the subject may be furnished to those who may be anxious to acquire a thorough knowledge of its principles and practice, without the inclination to enter into the elaborate calculations and mathematical details with which all former works on life assurance abound. We are glad to find that this desideratum is now supplied in the publication of a volume by Effingham Wilson, from the pen of Mr. Alfred Burt, containing an historical and statistical account of the population, the law of mortality, and the different systems of life assurance, including the validity and non-validity of life policies, with observations on friendly societies and savings' banks. It contains also a review of life assurance, explanatory of the nature, advantages, and the various purposes to which it may be applied. We have observed, and truly, that higher interest has been awakened to the advantages of life assurance within the past 20 years—a fact evidenced by the number of new institutions which have sprung up in that period. Still this, like many other highly useful systems, is inadequately appreciated, which will clearly be seen on taking into consideration the extent and rapid increase of the population, when it will be found that but a small section of the community avail themselves of the advantages offered, or have had the forethought to make provision for their families, in case of death or increasing bodily infirmity. This probably has not arisen so much from apathy or indifference as from a want of acquaintance with the principles of assurance, and from most of the authors of the works hitherto extant having treated the subject in too abstruse, technical, mathematical, and uninteresting a style, to render it inducive or intelligible to those who are ignorant of this branch of knowledge.

The author by this publication has furnished, in clear and intelligible language, a plain and practical treatise upon life assurance, and has added to our literature a very instructive work, containing curious, highly interesting, and useful information for all who may not be very familiar with the statistics of human life and the details of life assurance. The author is evidently *au fait* to his subject, and brings with him the fruit of experience in the subject he dilates upon; while much of the merit of the work consists in its classification and arrangement, giving great facilities while under perusal, and rendering it highly useful as a book of reference. It may be said to contain every detail requisite to obtain a comprehensive acquaintance with the entire system, and written in a style which will render the subject familar to persons of ordinary capacity and common-place attainments. The introductory observations convey some valuable information. We are here informed that the amount of capital already invested is 50,000,000*l.*, yielding a revenue to the Government of 1,000,000*l.* per annum. The sums accumulated by the various offices amount to 40,000,000*l.*—one-quarter of which amount has been obtained by the Equitable alone. The engagements entered into by the whole of the companies cannot be less than 120,000,000*l.* sterling, not only for the advantage of individuals now in existence, but affecting the interests of generations yet unborn. Money being the sole stock in trade of a life assurance office, they are necessarily exempted from those disastrous influences to which commerce generally is exposed. Being founded on vital statistics, and the acknowledged laws of mortality, the calculations upon which it rests are not liable to those changes inseparable from ordinary speculations. The first chapter is devoted to a statistical view of the population, an explanation of the objects and advantages of a correct census, with the geometrical progression of the population, from which some curious particulars are to be obtained. In the second chapter, Mr. Burt takes a view of the law of human mortality, and of the tables constructed thereon; shows the mode of ascertaining the number of deaths, and of calculating the probabilities and the chances of life; concluding with a history of the various tables which have at different times been constructed, and from which the uniformity in the number of deaths at corresponding periods is strikingly apparent. As an example of this, we give the following extract:—"In a single parish, a whole street may be depopulated; a single family may be exterminated; but these calamities, which fall so heavily upon the individual sufferers, are unknown to the great bulk of society. Of two men, the stronger and healthier dies; of two ships exposed to the same gale, the crazy bark arrives safe—whilst her sturdy consort sinks beneath the tempest's shocks. Each succeeding year witnesses a gradual diminution in the number of violent deaths—the efforts of science, and the growth of knowledge, giving to man a greater power over the elimates; but we still hear of mines being blown up, despite the invention of the 'Davy;' floating-belts and life-boats cannot prevent shipwrecks, or save more than a limited number; and all the art of the physician is often exerted in vain by the bedside of the young man—whilst the aged sufferer survives as if by miracle. But with the whole population, the duration of human life, which to ordinary observers appears so mysterious, is subject to laws as exact as those which regulate the recurrence of the seasons, or other natural events; and the number of deaths to be expected yearly at each particular age may be anticipated with such precision as to be entirely relied on. * * * The number of births, marriages, and deaths, the relative proportions of the sexes, the number of ships cast away, of houses destroyed by fire, of suicides, one year with another, are found to be nearly equal during equal periods of time. Thus it will be found that, out of any large numbers of persons at a particular age, the deaths during the ensuing year will be a certain number. Take 10,000 persons of the age of 52, we are as sure as we are of the times of eclipses, and the rising of the sun and moon, that the deaths among them next year will be about 150. The average duration of life is now ascertained with such minute accuracy, that it may be dealt with with more certainty than any other commodity, if we may thus express ourselves." In the third chapter, the author considers the rise and progress of life assurance, and its varying systems, in which will be found matter of curious interest, and valuable information respecting the origin and foundation of the different offices. The fourth chapter dilates on the principle and practice of life assurance, and describes the business rates, policies, and premiums, with various useful information on the subject of life assurance. This portion of the work closes with an exposition of legal invalidity to which assurance policies are liable, and shows that all policies in offices where the directors have the power to dispute are unsafe, points out the risk to which the assured are exposed, and the justice and necessity of fulfilling the conditions entered into, and paying every claim in full, rather than that the parties having the management of assurance business, as is too often the case, should attempt to overstrain any point of law to avoid payment. The final chapters contain several useful observations on the origin, rise, progress, and defects of friendly societies, and a comparison between the principles of assurance and savings' banks. The author has examined, in a comprehensive manner, the common objections urged against life assurance: and so lucid and convincing are his remarks on this subject, that we think much good will be effected by this portion of the essay in removing doubts, correcting errors, and inducing its more general adoption by all classes of the community. Taking the volume as a whole, we can say, that the entire subject is placed before ordinary readers in a clear, simple, and effective manner. The history, statistics, and science, is intelligibly and instructively treated; and this work will be perused by all classes of readers with much amusement, as well as edification.

* "Life Assurance: an Historical and Statistical Account of the Population, the Law of Mortality, and the Different Systems of Life Assurance; including the Validity and Non-Validity of Life Policies: with Observations on Friendly Societies and Savings' Banks; to which is added a Review of Life Assurance, explanatory of the Nature, Advantages, and the various purposes to which it may be applied." By Alfred Burt, Esq., Secretary to a Life Office. London: Effingham Wilson, Royal Exchange.

Suggestions for the Management of Railway Accounts; and a word or two on Audit. By Samuel Notley, accountant. London: Effingham Wilson.

This, as its title imports, is a pamphlet in which is suggested the best and simplest modes of keeping railway accounts, not only that the officials may always, at a glance, be perfectly aware of the exact state of affairs, but that shareholders of the lowest attainments may, on reference, perfectly understand the position in which their company stands. The method recommended is such as any good accountant would adopt, and has doubtless been followed by railway companies; and it would be well if the system was universally adopted. In the first period he separates the construction account from that of the rolling stock; and on opening the line, by his plan of keeping the revenue account, a mere glance at the balance-sheet would show the certain amount of net revenue, the state of assets and liabilities, and guide directors, to a fraction, as to what amount of surplus funds were legitimately available for a dividend, and had this plan been enforced in the Eastern Counties' offices, and honestly followed out, many of the evils that company has suffered would never have been inflicted on it.

Summer Beverages.—Mr. Masters, the inventor of an improved method of manufacturing nectar, and other aerated waters, has just completed an ingenious apparatus for drawing off liquids from bottles without removing the cork or stopper, by means of which bottles, or other vessels, can be charged with carbonic acid gas or with atmospheric air in a very simple manner, so that beer or other liquid which has become flat can be made as brisk as champagne, without the slightest trouble. Mr. Masters appears indefatigable in bringing out something new, and which, in every instance, has proved of general utility, among which may be mentioned his patent freezing and cooling decanters, jugs and vases of every description, also his patent sherry cobbler freezing and cooling jug, in which a sufficient quantity of ice for several sherry cobblers can be made in a few minutes (without the aid of ice), at the cost of 2d.; also his patent freezing and cooling machine for making cream and water ices, during the production of which (only a few minutes) blocks of ice can be made from spring water, and wine cooled at the same time, all without the aid of ice, and at very trifling expense. Mr. Masters has also brought to perfection several other useful machines for freezing and cooling, which are applicable to most domestic purposes where artificial cold is required, and for hot climates, hotels, or families, are alike indispensable. The apparatus described may be seen in operation at Mr. Masters's show-rooms, Regent-street, and Mansion House-street, City.

"STATISTICS OF COAL."—No. II.

BY RICHARD COWLEY TAYLOR, ESQ., F.G.S.

The following table gives a view of the relative magnitude of the principal coal-producing countries, and their respective areas of coal land in English square miles, with the proportions which they severally bear to each other. In Spain, the Asturias alone are noticed; in France and Belgium only the concessions:—

Countries.	Entire area each country.	Area of coal land.	Proportions of coal to their whole areas.
Great Britain, Ireland, Scotland, and Wales	120,290	11,859	1-10
Spain (Asturias region)	177,781	3,408	1-52
France (area of fixed concessions), in 1845	203,736	1,719	1-118
Belgium conceded lands	11,374	518	1-22
Pennsylvania, United States	43,960	15,437	1-3
British provinces of New Brunswick, Nova Scotia, Cape Breton, and Newfoundland	81,113	18,000	1-4½
The United States of America	2,280,000	133,132	1-17
The 12 principal coal-producing states	565,283		1-4
		184,073	

From this it will be seen that in point of absolute area of coal formation, after America the four eastern colonies of British America take the lead, being more than Great Britain, Asturias, France, and Belgium together; Pennsylvania, as a state, takes the second; Great Britain the third. But as regards European countries she stands first, Spain second, France third, and Belgium last, though, as regards territorial proportion, she stands second.

The following general summary presents a comparative view of coal operations in the different countries of Europe, and the year 1845 is adopted for general comparison:—

BELGIUM.—There were in full operation 212 mines, and not in work 97 others—making, in all, 309 mines, comprising 540 coal-pits in operation and construction, and employing 38,500 miners and 500 steam-engines, of an aggregate force of 22,851-horse power. The product of their labour was 4,445,240 tons, which were returned at the value of 39,844,191 fr., at the prices of extraction, equal to $7,689,900, or to 1,660,000*l.* sterling. In 1845, the quantity raised was 4,960,077 tons.

PRUSSIA.—There were about 752 mines, or pits, of coal, anthracite, and lignite in operation. These employed 24,024 miners, and produced 3,245,607 tons, whose value is given in the official returns at 793,860*l.* sterling. The four coal provinces of Prussia produced 3,650,000 tons, of the value of 22,500,000 fr. Three German states of the Zollverein yielded 250,000 tons, of the value of 903,750*l.*

FRANCE.—During the year 1845 there were, according to official documents, 449 coal mines work and unworked, employing 30,778 miners, and producing 4,141,617 tons of mineral fuel; their value at the pit's mouth was 1,603,106*l.* sterling. The average quantity raised in each of these three kingdoms, in 1845, was remarkably similar; but there is a material difference in the value assigned to the coal at the point of production.

GREAT BRITAIN.—As the details of the production and distribution of the coal in this country (except as regards the coasting trade and foreign exportation) are not officially registered, as in the continental states we have previously cited, an exact comparison with them can scarcely be instituted. We may state, however, that about 1845-46 the current estimate of the total production of coal in the British mines was 31,500,000 of tons, whose value at the place of extraction was considered to be 9,100,000*l.* sterling.

UNITED STATES OF AMERICA.—One of the chief characteristics of this immense territory is the enormous areas of forest and mountain, which remain almost in their primitive solitude. Within these regions vast ranges of coal formations exist; their limits imperfectly defined by the geologist, and scarcely more productive now than at the period of the earth's first occupation by the aboriginal races. It would be, under such circumstances, incorrect to attempt comparison with the well-worked coal-fields of Europe. It will be sufficient to give an approximate estimate of the annual production. From the census of 1840, it is to be understood that the capital employed in the iron trade in the United States was $20,000,000; in other metals, $1,820,061; in coal, $6,224,464—making a total of $28,476,656. The total number of tons of anthracite and bituminous coal raised was 1,849,317; workmen employed, 6811. These returns are supposed to have been understated, from the various difficulties met with in making returns; in 1845 the production of anthracite alone was 2,023,052 tons; 1846, 2,343,992 tons; 1847, 2,982,309 tons. Of bituminous coal it appears impossible to get correct returns; but a rough estimate of both descriptions for 1847 gives 5,000,000 tons, valued at the place of production at $7,500,000, and at the place of consumption, $20,000,000. Pennsylvania is the only state which can be at all compared with European coal statistics; but here, from the free nature of their institutions, correct returns cannot be obtained. This state contains 28,134,400 acres, of which 9,862,600 acres, or more than one-third, are covered with anthracite and bituminous coal. Kentucky, Virginia, and Ohio, have each also one-third their surfaces covered with coal-fields; Indiana has one-fifth, and Illinois actually three-fourths of her entire area carboniferous. These six states comprise 279,755 square miles, averaging each 46,626 square miles, or nearly as large as England, which has 49,643.

In the preparation of his materials, it was not intended to devote any portion of the volume to iron; as, however, the rapid advance of the coal trade is so intimately connected with that manufacture, Mr. Taylor has introduced some miscellaneous results which fell in his way. The respective proportions of the iron manufacture, in the different states of Europe and America, are, for 1845—Great Britain, 2,200,000 tons; United States, 502,000 tons; France, 448,000 tons; Russia, 400,000 tons; Prussia, 300,000 tons; Austria, 190,000 tons; Belgium, 150,000 tons; Sweden, 145,000 tons; Spain (1841), 26,000 tons; all other European countries, 50,000 tons—making a total of 4,411,000 tons per annum.

After passing from coal to iron, the author was very naturally led to railroads, steam-engines, and steam-vessels; so closely are the subjects woven into each other. The following statement shows the number of miles of railway finished and in progress, in 1844:—Great Britain and Ireland, 2069 miles; Germany and Prussia, 2500; France, 1750; Russia, 1500; United States, 3,688 = 11,507 miles. In England, the total miles authorised to be made, to 1847, were 8384, and 1862 constructed. From a non-official article, published in 1846, it appeared that in America there were in operation 4731 miles of railway, constructed at a cost of 26,325,983*l.*

In 1833, the number of steam-vessels in Great Britain was 336; in 1837, they had increased to 620; tonnage, 69,800; and, in 1845, they amounted to 916, with a tonnage of 118,772 tons. In the year 1811, the first American steam-boat was launched by Fulton. In 1840, the number of steam-vessels engaged in internal navigation in the States was 800; in 1846, there were 1500 on the western waters alone, exclusive of war steamers and revenue vessels. France possessed 75 steam-boats in 1833; in 1846, the number had increased to 259, exclusive of 68 war steamers, in commission and building; while, in 1847, Russia had 32 war steamers. The results of these investigations show that rapid as the march of productive industry has been in the Old World, the New World has by no means suffered herself to be left behind, more especially in the adaptation of the wonderful powers of steam, and her advancement in the operative and industrial arts.

[To be continued.]

EXTRAORDINARY INSTANCE OF DRY-ROT.—In the *Transactions of the Institution of Civil Engineers* (Ireland), there is a paper by Sir Thomas Deane on a singular instance of decay of timber from dry-rot, which took place in the Church of the Holy Trinity, at Cork. This church being found to be in a bad state of repair, the parishioners resolved on building a new one; but, through want of funds, the design was abandoned, and a thorough repair decided on. The tower was taken down, and a portion of the church rebuilt; a great portion of the old timber work was retained, and thought sufficiently sound; and immediately under the floor, and in connection with the burial vaults beneath, there were longitudinal beams of Irish oak, of from 12 to 14 inches square, among this retained timber; Memel joists were placed on these beams, new floors were laid, the pews refixed, and the whole completed and opened for service. About 18 months afterwards the congregation was annoyed by an unpleasant smell, and on opening the floors under the pews a most extraordinary scene presented itself. There were flat fungi of immense size and thickness, some almost occupied a space equal to the size of a pew, and 3 inches thick. In other places they appeared growing with the ordinary dry-rot, some in the form of a convolvulus, with stems from a quarter to half-an-inch in diameter; and when first exposed the whole were of a beautiful buff colour, and emitted the usual smell of the dry-rot fungus. The action on the Memel timber was astonishing—the shape was the same as when first from the saw, but the weight and strength were gone; a whole joist, 12 to 14 feet long, could be lifted by a man with almost as much ease as a walking-stick. Brick vaulting had to be substituted for the beams and floors, and which was paved with York and Shannon flags in Roman cement; new pews were erected; and although the expenses were very great, it is satisfactory to know that there has been no appearance of dry-rot since.

The Public Works of England.

No. II.—CANALS.

It may seem somewhat strange, that while canals of the greatest magnitude had been undertaken on the continent, England contented herself with scouring and deepening her rivers until the middle of the last century. The necessity, it must be owned, was not so stringent as in France. Yet the development of commerce in this country, long before the time we have mentioned, was sufficient to render almost necessary some better means of inland navigation than those afforded by our natural water-courses. It is true that the great southern towns, lying as they did either on large rivers or by the sea, did not require canals to the same extent as the cities of the northern and midland districts. As soon, therefore, as industry and enterprise had begun to assume importance in those parts of the island, the idea of forming canals to the various centres of manufacture followed as a matter of course; and in the year 1720 we find the first definite proposal for the execution of one of these important undertakings ever made in this kingdom. At that time the means of effecting a communication between the east and west seas, through the estuaries of the Aire and the Ribble, had attracted the attention of the enterprising men of Yorkshire and Lancashire. Various schemes were set on foot for carrying this project into execution, which resulted in an Act being obtained, in 1720, for the undertaking which has since ripened into the LEEDS AND LIVERPOOL CANAL.

Before, however, any practical progress was made towards the completion of this scheme, the Duke of BRIDGWATER commenced the execution of his own magnificent canal, under the supervision of Mr. Brindley. All other projectors now appear to have held back until they could witness the result of this work; and, consequently, scarcely anything was done in the way of inland navigation between 1737 and 1761, during which 24 years the Bridgwater Canal was being carried through every obstacle and discouragement, by the indomitable genius of its engineer, to a triumphant completion. The history of that great work is too well known to be repeated here; but the more than doubts expressed concerning it, and the prophetic warnings of inevitable failure which were uttered on all sides during its progress, prove how little was at that time understood in this country respecting that class of undertakings; and they prove, too, how extremely slow is the first growth amongst us of that very enterprise which we are afterwards destined to work out into such splendid development. The canal cost 220,000*l.*—an enormous sum at that time, and from the purse of a single individual. It is said that the Duke of Bridgwater had to live for many years upon 400*l.* a year, in order to pay for it. The recompense has been no less remarkable. Long since the annual income netted by means of the canal was valued at 130,000*l.*, and notwithstanding the completion of a whole network of railways through the district it traverses, that return, it is believed, is at present considerably exceeded.

One single canal was commenced during the interval above-mentioned; and which, having been completed before the Duke's, has the honour of being the first work of the kind executed in England. This was the SANKEY CANAL, running from the mouth of the Sankey Brook, in the Mersey, to St. Helen's. It is, however, little more than an improved edition of the long-used river navigation, as the brook is all along a feeder to the canal, which was by the side of it. Its length is not more than 12 miles, the fall about 78 feet, with eight single locks and two double ones, so that this first of our canal enterprises was no great work. Mr. John Eyes, of Liverpool, was the engineer.

The opening of the Bridgwater Canal gave a new impetus to this branch of enterprise. The Louth Canal got its Act in 1763, little more than a year after the opening of the Bridgwater. The greater part of this canal is on a continuous level, very little above the sea, running from the Humber, near Tetney Haven, to the River Ludd. The length is but 14 miles, and the original estimate 16,500*l.* It was so defectively constructed, notwithstanding the facilities of the county, that the whole affair, after 28,000*l.* above the estimate had been raised on loan, was assigned to a single man, Mr. Chaplin, to manage in his own way. This was the result of a too stringent economy in starting. It took a long time to get public companies to understand their own interest. The Louth Canal is now a useful work, as far as it goes, and very beneficial to the town of Louth and the neighbourhood.

The next canal attempted—in fact, the third opened in the country—was, like the Bridgwater Canal, the speculation of a single man. In 1764, Sir J. H. Duval cut a canal through the solid rock, for the purpose of connecting Hartlepool Harbour, in the county of Durham, with the sea. The canal is but 300 yards long. The next canal was likewise a private undertaking, projected and executed by a single man. Mr. J. Rymer made a canal from his coal and lime works to the tideway in Kedvelly Harbour. He obtained his Act in 1766. Long after, in 1812, a company undertook to improve and extend the canal, construct tramroads in connection with it, &c., from which resulted the present KIDVELLY CANAL, with its branches and adjuncts.

Thus, out of the four canals first executed, three were strictly private. In 1766 the first really important public canal was commenced, the STAFFORDSHIRE AND WORCESTERSHIRE. This work was engineered by Brindley himself, to proceed from the Severn, at Stourport, to the Trent and Mersey navigation, near Heywood, in Staffordshire. Its rise is considerable, as upon the top level it runs for 10 miles at a height of 294 feet above the Severn at Stourport, and of 352 feet above low water mark at Runcorn. In length it is almost 47 miles, and it cost 112,000*l.*, including a variety of accessary expenses in clearing away shoals from the bed of the Severn. The trade on this canal is immense.

The TRENT AND MERSEY CANAL was commenced in 1766. It was suggested by the Duke of Bridgwater, with whose water communication it is at one point connected, and was executed up to the time of his death by Mr. Brindley. The original estimate was 130,000*l.*, but it cost 324,000*l.* Little wonder, for it comprises 127 aqueducts and culverts—one of the former over the River Dove being very extensive—91 locks, and 6 tunnels. The famous Harecastle Tunnel, 2880 yards long, is situated on the summit level of this canal, whose total length is 93 miles.

The next undertaking in chronological order is one of the noblest works in the kingdom. The FORTH AND CLYDE CANAL was begun in 1768. This canal, commencing in the Forth at Grangemouth Harbour, passes within 2 miles of Glasgow, and thence into the Clyde, being the first realised attempt at connecting the two great seas of our island. Its length is 35 miles, and the greatest rise 155 feet. By the recent improvements it has undergone, sea-borne craft, drawing 10 feet water, are able to navigate through it, between the Irish Sea and the German Ocean. The locks are 74 feet long by 20 wide; they are 39 in number. On its course are 33 drawbridges, 10 large aqueducts, and 33 smaller ones. Among its many reservoirs is one that covers 70 acres, with a depth of 22 feet at the sluice. The first idea of this undertaking dates as far back as the time of Charles II.—that monarch having taken preparatory measures for cutting a channel in the same direction for the passage of ships of war. The design was calculated to cost 500,000*l.*, but was far too magnificent for the impoverished exchequer of the Stuarts. In 1723 a fresh survey and estimate was made by a good engineer, Mr. Gordon, but nothing more was done until 1764, when Lord Napier employed Mr. Maskell to make a report, the result of which was, that the celebrated Smeaton was engaged to undertake the work according to the present plan. Sundry difficulties, as usual, arose—the chief being the enormous enhancement of the cost. The estimates fixed this at 147,337*l.*, but when this had been expended, and between 70,000*l.* and 80,000*l.* additional borrowed, the projectors found that only about half the length had been, though with much rapidity, completed. Disputes then occurred with the engineer, amidst which the works stood still, but being presently recommenced, the canal was brought to within 6 miles of the Clyde, when its further progress was again stayed by the want of funds. An Act, passed in 1784, alleviated this difficulty, by enabling the proprietors to borrow money from the Scotch Barons of Exchequer, out of the forfeited estates, and with this assistance the work was completed in 1790. The whole stock amounted at last to 519,840*l.*—considerably beyond the sum estimated by Charles II. for his ship canal, and which, if mentioned at the beginning, would have stifled the project in its birth.

As a collateral assistance to the navigation of the Forth, the BORROWSTOWNESS CANAL was commenced in the same year with the Forth and Clyde. It is a level canal, about 7 miles long, and cost 21,000*l.*, the original estimate having been 5000*l.* In the same year Brindley commenced the COVENTRY CANAL, running from the Trent and Mersey to Coventry. The project appeared a failure for some time, as the requisite capital was not forthcoming. But the Trent and Mersey Company took the matter up in 1782, and the works were begun in earnest. It was finished in 1790, and forms, with the Ashby-de-la-Zouch and Oxford Canals, which communicate with it, the longest canal line in England, being upwards of 70 miles, exclusive of branches. The length of the Coventry Canal is somewhat short of 38 miles, with very few locks, and a level at the highest of 81 ft. The expense was about 90,000*l.* Brindley's great object was to connect, by canal navigation, the ports of London, Liverpool, and Hull. The last link in this great chain was that grand undertaking, for the time, the OXFORD CANAL. This work was commenced in 1769, beginning from the Coventry Canal at Longford, and extending to the Thames at Oxford. The whole capital authorised to be raised for this purpose was upwards of 300,000*l.*—the original estimate being 178,648*l.* The length is 80 miles, carried at the summit level at the height of 387½ feet above the level of the sea. It has three aqueducts the one at Brinklow nearly 300 feet long, and two tunnels the longest, at Fenny Compton, being 3564 feet. The level, at its commencement at the Coventry Canal, is no less than 74 feet above the surface water of that channel, and rises from thence to the summit level about 75 feet. On the whole, this is one of the most important canals in the kingdom, as forming the connecting link between the inland navigation of the northern and southern districts.

In the 20 years that followed, up to 1790, the number of canals executed in the country was 17—few of them of equal importance with the preceding. Brindley projected the CHESTERFIELD CANAL in 1769; it was carried on under his direction and that of his brother-in-law, Mr. Henshall, till its completion in 1776, at a cost of 150,000*l.* Its length is 46 miles, with 65 locks, and one very extensive tunnel, 2850 yards long, near Harthill. Mr. Grundy had proposed another plan, which would have saved 5 miles, and between 20,000*l.* and 30,000*l.*, but Brindley's experience was preferred. The undertaking was a very successful one; but the most important of Brindley's later suggestions was the ELLESMERE AND CHESTER CANAL. The famous aqueduct over the Dee is on this canal carried at a height of 125 feet above its bed, on 19 pairs of stone pillars, 52 feet apart. Several others of the great specimens of canal works in the kingdom were of his undertaking. It runs from Ellesmere Port to the Montgomery Canal, a distance of 61 miles, with numberless collateral branches. During the progress of this canal the greatest possible difficulty was experienced in raising the money. The shares at one time were sold at 1 per cent. of their original value. The whole cost was nearly 400,000*l.*

The THAMES AND SEVERN CANAL, another of Brindley's projects, was commenced in 1783. The longest of the tunnels—the Tarleton Tunnel—is on this canal; it is 2¾ miles long. It runs from Stroud to Cirencester, with a length somewhat above 30 miles. The original estimate for this work was 190,000*l.*, the actual cost above 500,000*l.*; one of the largest excesses in canal history—and the more strange, as there are no branches. It has 42 locks. A union between the Thames and Severn, by means of the Avon, was another of Charles II.'s projects.

The other canals executed during the period alluded to were the BASINGSTOKE, about 40 miles long, cost about 186,000*l.*; the EREWASH, running from the Trent to Langley-bridge, about 12 miles, cost 23,000*l.*; the CROMFORD, from the Erewash to Cromford, 18 miles, on which are one or two of our finest aqueducts, cost 86,000*l.*; the BRADFORD, 3 miles long, cost 9000*l.*; the DUDLEY, of which the original plan was a length of 13 miles, at a cost of 12,000*l.*, but the expense of cuts and connecting branches amounted to somewhere about 150,000*l.* additional; the MARKET WEIGHTON, 11 miles long; the ANDOVER, 22½ miles long, cost 65,000*l.*; the ST. COLUMB, 6 miles long; the SHROPSHIRE, a canal of 7 miles from the furnaces at Coalbrook Dale to the Severn; the STOURBRIDGE, and three private canals—one executed by Sir J. Ramsden, near Huddersfield, another by Sir N. Gresley, near Newcastle-under-Lyme, and the third by Lord Thanet, a short affair, near Skipton Castle.

After 1790 a violent impetus was given to canal speculations. Between that date and 1795 no less than 43 canals were planned, and acts relative to 15 new undertakings were passed in 1793—the largest number of any year in history. The dates of the first Acts, relative to two of the most important undertakings in the kingdom, the Grand Junction and the Kennet and Avon, belong to this period, being passed, the one in 1793, and the other in 1794. The first of these, one of the most spirited enterprises of the kind, begins at the Oxford Canal, near Braunston, to the Thames, at Brentford—a course of 90 miles. The undertaking was the last step in Brindley's grand plan of inland communication throughout the country. We had attained already a complete water connection between Liverpool, Hull, and London; but the old river communication, with its tortuous course and manifold disadvantages, still existed in a most important part, that between Oxford and London; and it was to make the canal communication complete that Lord Rockingham, in 1792, employed Mr. Baines to make the survey for the present canal. The first estimate was 600,000*l.*; but, as usual, cuts and extensions required the raising of a further sum of 550,000*l.*, making this one of the most expensive undertakings in the kingdom. The length is above 90 miles. There are 98 locks and two tunnels, with several deep cuttings; one near Balbourne 3 miles long and 30 feet deep for the greater part of the way. There are, besides several embankments—in fact, this, on the whole, came nearer to modern railway enterprise than any work previous to the commencement of the iron age. From the summit level at Tring to Harefield-park, a distance of about 21 miles, there is a fall of 300 feet—the height of the summit part being 380 feet above the Thames at Limehouse. The Paddington branch, which is a continuation of the Grand Junction, is 34 miles quite level; the water-course for 20 miles, from Paddington to Uxbridge, requiring but a single lock. The greater part of this canal was completed in about 10 years.

THE KENNET AND AVON CANAL.—The most important water link between the west and east of the southern counties in England, was commenced in 1794. It runs from the Avon, at Bath, to the Kennet, at Newburn; and, as the former river runs on to Bristol, and the latter to the Thames, a communication is effected between Bristol and London; in fact, between the Irish Channel and the German Ocean. It completes moreover the water circuit from the northern districts round the island, and passes through or near several of the most important towns in the south. The original estimate was 570,000*l.*; but a further sum of 702,000*l.* was required to be raised under four successive Acts, to complete the undertaking. The engineering difficulties were in some parts very great. In Somerset and Wiltshire, the country through which it passes is very rugged. At one place, near Devizes, a fall occurs of 239 feet in 2¼ miles, requiring 29 locks. The length is 57 miles, and the whole rise 210 feet, with 31 locks, and the fall 404½ feet, with 48 locks. The expense per mile (22,315*l.*) makes this one of the most costly canals in the kingdom. As a property this undertaking has been most injured by the Great Western Railway. The company were only enabled to compete with the railroad for the carriage of heavy goods, by charging half their prices when they enjoyed the monopoly. The railway at first professed only to carry light goods, and thus disarmed the opposition of the canal, but it has ended, as might have been anticipated, in carrying everything. One or two of the aqueducts on the canal are of beautiful structure, the Dundas aqueduct especially, which is situated about four miles from Bath.

The number of the works now undertaken prevented the commencement of new designs, and besides the continental disturbances began to be seriously felt. From 1795, to the end of the century, only four canals were commenced—the Grand Western, the Dorset and Somerset, the Newcastle Junction, and the Aberdeenshire. All these, though very useful works, were but of secondary importance. The first-named, running from the Exe to Taunton, cost about 330,000*l.*—the length is about 35 miles. The second was never executed, the third is a very trifling affair, and the fourth only goes to the length of 19 miles: 36 canals have been commenced in the present century, the principal of which are the REGENT'S and the CALEDONIAN. The larger undertakings were often abandoned, at least in their chief points, which was the case with the Bridgewater and Taunton. The Caledonian, as will be seen, does not pay at all. The GRAND SURREY, the original subscription for which was 45,000*l.*, but which cost above 300,000*l.* additional, pays a very trifling per centage. The EDINBURGH AND GLASGOW, the MACCLESFIELD, and the GRAND UNION, are the three other of most importance. Enterprise was, however, busy about the old lines—most of which received important improvements in this period.

All the undertakings here enumerated have been completed by private persons, either singly or in association. The only work actually undertaken by the Government has been the Caledonian Canal. Watt first surveyed this line, but it was carried into execution by Telford. It cuts completely through the Scotch Islands, commencing at the foot of Ben Nevis, and running through three Scotch lakes to Inverness. The length of the whole is above 60 miles; but very little more than 23 of this is canal, the remainder being lakes. The original intention was to facilitate the transport of Baltic timber, but the traffic has turned out far below the orignal expectation. The cost to the Government has been above 1,000,000*l.*; and in 1842 the expenditure for wages and maintenance actually exceeded the receipts; the former being 2090*l.*, and the latter 2038*l.* We must add, indeed, that 576*l.* of the charges are put down as extraordinary expenditure in building boat-houses, &c.; but, even so, the surplus would be very little above 500*l.* There are 28 locks on this canal, of which a chain of eight, called Neptune's staircase, alone cost 5000*l.* The works of the canal are of first-rate order, and the channel of enormous breadth and depth, as being intended for ship navigation. The width at top is 110 feet; at bottom, 50; depth, 20 feet; the locks 172 feet by 40. All this explains the cost, together with the nature of the country through which the canal passes; but it is an instance of the failure of Government undertakings, as far as mere profit is concerned. Vessels of upwards of 160 tons often pass the canal.—*Daily News.*

SWANSEA HARBOUR TRUST.—At the usual monthly meeting of the members, on Monday last, after submitting the financial statement for that period, the CHAIRMAN (Pascoe St. Leger Grenfell, Esq.) called attention to the subject of flooding the Town Reach. He said that, at a meeting held on the 14th of May last, it was resolved not to apply to Parliament for fresh powers, but to carry out and complete the work with those which they at present possessed. Mr. Abernethy, the engineer, had arrived in Swansea; the ground had been minutely inspected, particularly Corporation Quay and the slag bank, where it was intended to erect gates for the half-tide basin. The committee considered that the trustees had purchased sufficient land for carrying out the proposed plan, and were satisfied with respect to the powers of their present Act of Parliament. They had directed Mr. Abernethy to make a report, which he read. After alluding to some unforseen differences which had arisen, he submitted a plan which he was confident was within the scope of their parliamentary powers. By 7th William IV., cap. 126, cl. 70, the trustees are empowered to convert into a wet dock the bed of the river Tawe at a certain point, and to erect and maintain a lock or gate across the bed of the said river at or near Corporation Quay, and to erect and maintain a bridge over the river near the public quay. In accordance with this power, Mr. Abernethy proposes to erect such dock gates and bridge near the quay, on ground purchased of the Duke of Beaufort for that especial purpose, and which is now the property of the trustees. Also, to construct a gate across the river, opposite the Cambrian Hotel, to form a half-tide basin, the ground having been also purchased of the Duke for the purpose. The lock to be 160 feet long between the gates, 56 feet wide, capable of accommodating two vessels of from 300 to 400 tons at one time, or one of the largest class of merchants' vessels. The entrance gate to the outer basin to be 70 feet wide. He also proposes the rebuilding a portion of the quay, and the construction of an intercepting culvert or sewer. In order that the trade of the port may not suffer interruption from the work, it is recommended to carry them out in portions—first the lock, bridge, and rebuilding quay wall, estimated at 15,600*l.*; then the entrance to the half-tide basin, 8500*l.*; together, 24,100*l.*; and if a large lock is constructed in addition, and the culvert at the joint expense of the trust and the corporation, the entire cost of the works would be 27,950*l.* As to the question of damage, the engineer considers that, so far from any injury being done, all property in the vicinity would be greatly benefitted. It was resolved that the report be adopted, and that as soon as 10,000*l.* was subscribed the works be commenced. The chairman further stated, that Mr. Abernethy had waited on the Tidal Harbour Commissioners, who were of opinion that the trustees had adopted the best course they could under the circumstances, and there was no doubt of necessary consent being granted, although it was necessary to make a formal application.—An application was made by Messrs. Pegg and Davey, colliery proprietors, for leave to erect a quay wall 150 ft. long, adjoining that of the Patent Fuel Company, in the New Cut.—After some opposition, on the grounds that compensation ought to be made to the trustees, the request was granted, subject to the usual conditions.

THE BRITANNIA BRIDGE.—On or about the 19th inst. is the time fixed for mooring the first of the stupendous tubes which will form the Britannia-bridge to the piers proposed for their reception. The work of mooring these enormous iron structures will be much more arduous than was that of placing the Conway tubes, as they are much larger, and the difficulties to be overcome are considerably greater. The *Carnarvon Herald*, in a notice of the forthcoming event, says, "The tubes are eight in number, four of which, smaller than the rest, are to be seen in course of construction, on scaffolding of great strength, occupying the spaces between the land towers and the inland abutments, which are 230 feet apart, at either extremity of the bridge; two tubes being placed parallel to each other, forming the roadway to and fro. The four larger ones are placed together on stages reaching into the river, and covering a long distance along the Carnarvonshire shore, each measuring 472 feet in length, and weighing 1800 tons. Three piers of masonry of stupendous dimensions, the highest of which rises on the Britannia Rock in the middle of the straits some 230 feet, being about 70 feet higher than the arch hollowed out for the reception of the tubes, stand towering over the foaming waters. The traveller is also attracted by the colossal sculpture of four monster lions, which distinguish the entrance to the tubes, two at each end, couched on the summit of lofty pedestals. They contain about 8000 cubic feet of limestone. Near to the stage on which the tubes are erected are eight pontoons, two of iron, and the others of wood, ready for floating the first tube to its resting place between the pillars. This has just been completed. The piles on which it was built have been removed, and it now rests on two walls of masonry, erected at either end, affording sufficient room for placing the immense pontoons beneath. Its strength has been tested with satisfactory results. Coils of rope cable, which will be used to guide the tube when afloat, by means of strong capstans fixed on the shore, have been brought to the spot, and experiments are being daily made by the parties on whom the responsibility of removal rests to insure success. The ponderous hydraulic machinery for raising the tube to its proper elevation is being placed in the archway of the towers, and the preparations in every department are carried on with great earnestness. The length of the bridge, when completed, will exceed a quarter of a mile."

IMPROVEMENT IN WORKING THE VALVES OF A LOCOMOTIVE.—Mr. Simeon Goodfellow, machinist, of Ida Mills, Troy, New York, has made some very ingenious improvements in the manner of working the valves of a locomotive, for which he has taken measures to secure a patent. The arrangement is very peculiar: a longitudinal shaft runs along directly under the boiler, and on it is a drum with two eccentric grooves in it. This drum revolves with the longitudinal shaft, and into the eccentric grooves which run around the periphery are fitted two small heads of the valve rods. These valve rods are of peculiar construction: they are fixed on pivots to a plate secured below around the shaft spoken of, and project upon a line to work the slides of the valves in the form of bent knees. When the longitudinal shaft revolves, which is done by a cog-wheel on the driving-wheel shaft meshing into another connected to the shaft spoken of, the valve-rods receive a reciprocating motion according to the forms of the grooves in the drum. These grooves are formed to operate the valves like cams, and by small guide-rods below they can be altered to cut off at any point desired. The improvement embraces the principles of working the valves from a common centre below the boiler, giving them the rapid operation of the cam, and the benefit of employing the cut-off or not at any desired point. It is true that it is more complex than the common simple eccentric; but experience may demonstrate it to have advantages to cover far more than the loss of simplicity.—*Scientific American.*

FOREIGN INTELLIGENCE.

MADRID.—The Board of Mines has published a statement of the silver obtained in 14 mines of the Sierra Almagrera, and in Murcia; it amounts to 9991 marks 4 ozs. and 2 half-drachms, or 5939 25-100ths lbs. troy.

The report of the Charleroi Chamber of Commerce gives a very interesting account of the conduct of the labourers and artisans employed in that district, during the period of severe depression following the French revolution. It appears from extracts published in the Brussels papers, that, notwithstanding an immense fluctuation in the rates of wages, which were for a lengthened period much reduced, the mining and manufacturing population inhabiting this part of Belgium were so well affected towards their Government and its existing institutions that they bore their distress with great resignation.

The Burlington Manufactory Company at Boston had failed. The nominal capital was $250,000, $200,000 of which was paid up, but its liabilities are double that amount. It is presumed that all the liabilities to the public will be paid, but the shareholders will be losers to a considerable amount.

CALIFORNIA.—The *Southerner* has arrived at New York, in 44 days, from San Francisco, with Lieut. Beale, and advices down to the 14th April. The *New York Herald* says—"The arrival of Lieut. Beale, with this late news from California, and a lump of gold weighing 8 lbs., threw Wall-street into a state of the greatest excitement and delight. Mr. Aspinwall (of the house of Howland and Aspinwall) was surrounded with crowds of eager brokers and merchants, all curious to catch a glimpse of the 8 lbs. lump. There was no mistake about it: there was the pure gold from El Dorado. No gold ever attracted more attention, or was more coveted, than that lump. We shall see what effect it will have on stocks. We learn that Lieut. Beale has in his possession a watch, encased in a big lump of pure Californian gold, 23¼ carats fine, with a brass cable chain, with large lumps of gold attached to every other link, hammered in in the roughest and richest profusion. Big lumps of gold were hammered together around the watch, till the whole, excepting the face, was encased in the precious metal. The key was a 'chunk' of gold, with the pipe inserted in it for use. Altogether, it was one of the ugliest looking, and richest, and most valuable watches in existence. The *Oregon*, it will be remembered, left Panama on the 14th March; she reached San Francisco on the 1st of April. We learn that labour was very high at San Francisco, and the quantity of shipping there very large. Many vessels were laid up. The price of goods had declined considerably, in consequence of the stocks on hand, and still larger ones expected; the fall had been very material. *There was no end to the gold*; its richness and abundance more than confirmed all previous accounts. Although he himself brought a piece weighing 8 lbs., Lieut. Beale assures us that he has seen a lump actually weighing 25 lbs. He says that everybody is getting rich in California—that common labourers can almost make a fortune. Lieut. Beale speaks in high terms of the order maintained by the population on the placers, as well as in the more settled parts. There are few disturbances of any kind, and owing to the strict administration of a kind of extempore justice, crimes have become less frequent. The only punishment is hanging. When a person commits any theft or outrage, he is brought before a jury of 12 men selected for the purpose, who go through the regular forms of trial, and if convicted he is at once executed. Three men have lately been hung at the diggings, one of them for stealing a horse."

Mr. Parrott, United States' Consul at Mazatlan, has communicated the following interesting particulars:—"But the riches of California do not consist in gold alone: all the precious metals are there found in greater or less profusion, as well as the rarest and most valuable jewels. Two mines of silver have been lately discovered, one of which is known to but few persons, who jealously keep the secret. Platinum is also known to exist in considerable quantities. A rough diamond, nearly the size of a hen's egg, has been found by one of the miners in the Sacramento Valley. General Vallejo, who was Mr. Parrott's informant, says that it was brought to him by the finder, who demanded $180,000 for it. Emeralds of large size are frequently met with, but their value is scarcely known. Three or four new quicksilver mines have been discovered, one of which, a very rich deposit, lies between the valley of Santa Clara and San Joaquim. The Forbes Mine, however, is the only one worked as yet. The extent and value of these quicksilver mines is not equalled by any other locality in the world. Beds of coal have also been worked near the coast, but cannot, of course, be worked under the present state of things."

The mail steamers, *California* and *Oregon*, have at last returned to Panama. At least half a million of dollars in gold has been brought by these two steamers to Panama. There was little news at San Francisco when they left. Gold was more abundant, and the most extravagant reports of the richness of the gold region were regarded as moderate accounts of the fact.

Port Philip papers to the 11th Feb. have been received, and contain further vague allusions to gold discoveries in the neighbourhood of the Pyrenees district. Some expeditions had started for the spot where the mine was supposed to be situated, and one had returned, the adventurers having failed in discovering any traces of the auriferous deposit. The specimen of ore which was said to be in the possession of Mr. Bretani, had been subjected to an assay, and was alleged to have produced gold to the extent of 95 per cent. It was considered certain, notwithstanding the absence of all direct evidence, that the precious metal is to be found in the colony; and the settlers, placing full faith in the reports, have prepared themselves for investigating the outlying neighbourhoods wherever the smallest indication of mineral wealth has been known to exist. Absurd statements had also been made respecting the character of precious stones collected by parties who had visited the interior, and these getting general currency, formed the most attractive part of the gossip in the various journals. The labour market had not experienced any inconvenience from the late arrivals of emigrants, and rates of wages, with rations, continued to be allowed on a liberal scale.

VENEZUELA.—The discovery of gold here is confirmed, the placer is situated in the canton of Upata, as before stated, about 180 miles from the city of Bolivar, in Angostura. The largest specimen exhibited weighed 1 oz. The place of deposit is represented as abounding with the gold in a nearly pure state. The country was tolerably quiet, but a fresh revolution was deemed probable.

MODE OF EXTRACTING GOLD FROM THE CREVICES OF LIMESTONE AT SARAWAK.—Mr. Hugh Low, in his *Sarawak, its Inhabitants, and Productions*, says—"Last year I accompanied Mr. Brooke on a visit to the rocks. The place they were then working was about four miles from the river, and about that distance from Semawan and Temdong. This place was called Battu Kaladi, and was a limestone hill about 200 feet in height, the surface of which was worn, like all the limestone rocks of the country, apparently by water, into ridges so sharp that it would have been exceedingly dangerous to have fallen upon them. Amongst these ridges were holes, very small, continuations of which penetrated into the heart of the mountain, some of them being 40 or more feet in depth. The only difficulty appeared to be in the labour of making the aperture sufficiently large to admit the miner; but, this accomplished, on his descent he found the bottom, which invariably opened to a cave, covered with earth of a loamy nature. This, on being brought to the surface in baskets, was washed, and we were told produced a bengkal of gold (about one ounce) and three quarters from each bushel of earth; from six to ten or twelve bushels being found in each cave, according to its size. It was accordingly a very profitable speculation, and the working was carried on by all the idle and poorer classes of the community of Sarawak: so much so, that it was difficult to hire men for ordinary work. The Chinese, who were not permitted by the Malays to work in the rock, were quietly trenching the earth at the foot of the hill, which they had long worked for the same purpose, and with more certainty of profit, as it is not always that the caves, after the labour expended in getting into them, are found to produce the coveted metal. How the gold should be discovered in these fissures at all is very remarkable, and, perhaps, may afford a curious fact for the study of geologists and mineralogists. It cannot have descended from any place higher, as the caves are found on the highest as on the lowest parts of the surface of the flat-topped hill; nor, after repeated examinations of the limestone, is the slightest trace of the metal discoverable in it. The surface of the rock is but scantily furnished with earth, and that is of a vegetable nature. It is true that the whole of the soil of the surrounding district is alluvial, and strongly impregnated with gold, but not to nearly so great an extent as that found in the fissures above described; hence the soil in these differs in the relative quantities it contains. The golden shower in which Jupiter is fabled to have transformed himself appears to have fallen here. Antimony is found in a vein in the same rock, the fissures of which produced the gold above described. The gold found in alluvial soils is that of which the supply is most to be depended on. This is, in Sarawak, found and worked in many places principally by the Chinese, though the Malays also occasionally work it on a smaller scale. The earth in which it is found is a yellow clayey loam; this being removed to a series of large troughs, into which the water of a pond, previously dammed up for the purpose, is turned, the heavier particles of earth are removed. What remains is washed away in small shallow wooden dishes, until nothing, or very little, but the pure gold remains, the refuse on melting that which is cleaned by the Chinese never exceeding the 1-32nd part. It is not found in veins in any part of Sarawak, but in small particles distributed through the soil; nor does it extend to any great depth. In particular cases, the small grains are preferred by purchasers to the larger, as they are generally much cleaner than the latter, the crevices of the granulated particles of which render them more difficult to be thoroughly cleansed. The gold found in the river is of the same description as that last mentioned, and is probably washed from the alluvials during heavy rains. It is sought for by numberless Malays during the dry season, when the water of the river is low. They are much exposed to agues, from their manner of standing up to their waists in water during the time they are washing it, which is for the convenience of having the strength of the stream to carry of the gravel and sand, the gold, by its greater weight, falling to the bottom of the flattish implement before described. This is usually a profitable employment, and suits the indolent Malays much better than the method followed by the Chinese."

LEGAL IMPEDIMENTS TO MINING IN IRELAND.

At a recent meeting of the Dublin Statistical Society, Professor HANCOCK read the conclusion of a paper "On the Economic Causes of the present state of Agriculture in Ireland," in which the tendency of the laws to retard, rather than promote, mining industry was ably dwelt upon. By the law of Ireland, the penalties for "waste" come into operation with regard to mines, and it is waste for a tenant or proprietor of a life interest, unless made dispunishable to open and work mines. Mines of gold and silver, if found on the land of a subject, immediately cease to be his property, and become the exclusive property of the Crown; and according to the common law, if gold or silver was discovered in combination with ore of the baser metals, the whole produce of the mine was considered liable to the royal prerogative. By a statute, 4th Anne, chap. 12, however, this right was limited, giving the Crown a pre-emption to the ore at certain prices. By the 55th George III. the price was fixed at 25*l.* per ton. This right of pre-emption in the Crown is a species of taxation, and when tested by the principles of taxation it must be condemned as unequal and extremely burdensome, if it be enforced. When not enforced, its existence produces no revenue to the State; but still burdens all those engaged in mining speculations, by exposing them to the risk of having their property confiscated. Should the fertility of lead mines decrease, and the demand for lead increase, the price might rise above 25*l.* per ton, and the cost of raising the lead might also rise above 25*l.* In such a case, by this right of pre-emption, the entire profit of the company would be confiscated by the tax. This is no imaginary case; for although it happens that the right of pre-emption of lead mines has not been exercised, the right of claiming gold mines was exercised in 1796, and part of Lord Carysfort's estate, near Arklow, was taken possession of by the Government, because some quartzose and ferruginous sand was discovered containing particles of pure gold.

All the impediments, as to the transfer and application of capital to land, which I enumerated (except the law of agricultural fixtures), impede the working of mines. An attempt was made in the Irish Parliament to remove some of these impediments, by enabling tenants for life and others, under disabilities, to grant leases of coal mines on certain terms, and other mines under other limitations. But these terms and limitations were so strict as to restrain the benefits conferred to a few of the most fertile mines, as none others could be profitably worked on the terms. Thus the leases of coal mines were not to exceed 40 years, and the rent was not to be less than two-pence for every ton of coal. For other mines the leases were not to exceed 31 years, and the rent not to be less than one-tenth of the part of the ore to be raised out of the mines, without regard to the expense of laying the ore on the bank.

The laws also limit the amount of rent to be paid; and Mr. Purdy, the secretary to the Mining Company of Ireland, has stated that this limit of one-tenth of the gross produce of the mine, clear of all expenses attending the raising of ores and preparing them for smelting, is more than *double* the average amount of rent payable by the mines of Cornwall—thus presenting a complete barrier to the Irish mines entering into competition with mines of equal fertility in Cornwall. Mining leases are subject to another restriction—that if not worked within one year after the lease is granted, or if at any time during the lease six men are not employed for 150 days, the lease is forfeited. The risk of forfeiture is an additional disadvantage attending mining speculations, because the circumstances of the markets may be such as to render it unprofitable to work the mines continuously. One step in the right direction has, however, now been made; and by the efforts of Mr. Purdy, who instead of waiting for a change in the knowledge or character of the Irish people, persevered to obtain an alteration in the law; and, by the Act of last year, the power of leasing is extended from 31 to 41 years, and the absurd restriction of rent to one-tenth is repealed.

LINARES LEAD MINES.

We copied, on Saturday last, from the *Mining Journal*, an article, which stated that an English company had been formed, for the purpose of unwatering, and again restoring to activity, these celebrated mines. We have now before us a prospectus of this company, and numerous documents, on which its promoters have based their operations.

The mines are situate on the territory, and three miles north-west of Linares—a small town in the province of Jaën, one of the richest of Spain for mineral produce. Numerous excavations, extending over a surface of 10 miles square, show that the ancients were aware of the existence of these lodes; but it was only at the commencement of this century that their development became considerable, by the erection of large establishments by the Spanish Government for the extraction of lead for the service of the army, and it is from Linares that all the arsenals of Spain are supplied with that material of warfare.

The soil was, however, so rich, that the Government did not think it necessary to monopolise its produce. Out of five parallel lodes, running from south-east to north-west, the centre is the only one which is worked by the Government; the others were conceded to private individuals, or to companies, and have all been worked with great profit.

It was to the lode, situate about 500 fms. west of that in possession of the Government, that the attention of the English company was directed by Mr. Duncan Shaw, to whose intelligence and energy are owing the important works now in course of execution at the silver mines of Guadalcanal, with so much prospect of success. From official documents collected by him, it was established, that no lode at Linares had yielded such enormous quantities of lead as this one, and that its product for copper had been considerable, though varying. From one bunch of ore copper had been extracted, in four months, of the value of 20,000*l.*, and this independent of the lead produced in the meantime. The southern part of this lode was denounced, in 1832, by the Marquis of Remisa, who obtained from the Government five pertenencias, each 200 yards long by 100 wide, on the course of the lode, which have now become the property of the English company. This mine, called the Pozo Ancho, yielded such vast returns that the marquis erected considerable establishments for the purpose of smelting the ore; and despite the ignorance displayed in working the mine itself, and the enormous expenses incurred in keeping the water, his profits were very large for some years. We need hardly say that, at this period, steam-engines, as applied to the unwatering of mines, were almost unknown in Spain; even at this day there is not one at the mine worked by the Government at Linares. The marquis then soon arrived at that point where human efforts become insufficient for this purpose; and as the work became heavier, frequent strikes for wages quickly brought the proceeds of the mine to a level with its expenses.

Our readers may judge of this, from the fact that, in 1843, when the mine had been worked to the depth of 50 fms., 192 men were employed, day and night by turns, in bringing the water in sacks to the 30 fm. level, whence it was raised by a whim, employing 24 mules constantly. The wages of these men, and the keep of the mules, amounted to the sum of 17*l.* per day; while a steam-engine, performing the same functions, on a mine in the neighbourhood, does not cost for fuel and oil at this moment more than 8*s.* 6*d.* per day. Towards the end of 1842, these men struck for an advance of a rial (2½*d.*) per day, which was granted them. They then struck for a second and a third rial, until the marquis, out of heart, and embarrassed by speculations in other matters, felt himself obliged to stop the working of the mine, about the commencement of the year 1843, and, we believe, died shortly afterwards.

We have before us an official statement of the duties paid (5 per cent.) on the ore sold and lead smelted, the produce of Pozo Ancho, extracted from the books of the *Inspection de Minas de Linares*; from which it appears that the quantity of ore, averaging 80 per cent. for lead, containing a mean of 30 ozs. of silver to the ton, amounted to 123,896 arrobas; of potter's lead, 3751; and of lead, 466,125 arrobas (25¼ lbs.) If we take the three years immediately preceding the suspension of the working, we find that the annual produce of ore and lead, principally the latter, exceeded 1300 tons.

Mr. Duncan Shaw, in his report, says that, with half-a-dozen Cornish miners, a 30-inch steam-engine and 6-inch pumps, nothing would be easier than to unwater the mine in two or three months; and that from information he received from all the men he saw who had worked in the mine, the lode left standing on the day the works were suspended, was a yard and a half in thickness. The lode is regularly accompanied by a vein of rich sulphuret of copper, varying from 1 to 3 inches in thickness; and it is Mr. Shaw's opinion that, from the nature of the soil (granite), copper will be found in greater abundance as the mine is deepened.

The directors of the company are to some extent the same as those of the Guadalcanal Silver Mining Association; Mr. Duncan Shaw, one of the most talented mining engineers in England, and whose long residence in Spain renders his services invaluable, is the resident director; Mr. Henry Thomas is appointed manager, and is already in Spain, awaiting the arrival of Capt. Matthew Curry, and 14 Cornish miners, who left England on the 27th May and 4th June, in two vessels, containing the engine, boiler, pitwork, and, perhaps, the most complete assortment of mining implements that ever left England.

The engine-house, offices, &c., have been for some time in course of construction; no time will, therefore, be lost, on the arrival of the machines, in commencing to unwater the mines; and if, as we do not doubt, the calculations of Mr. Duncan Shaw are as exact in this enterprise as they were in that of the Guadalcanal Mines, the year 1849 will not end before the Linares Lead Mines are restored to profitable working.—*Courrier de l'Europe.*

VALLEY OF LOETSCHEN SMELTING AND MINING COMPANY (SWITZERLAND).—This company, which is formed for the development of the lead deposits, stated to be found there in large quantities, is about to commence smelting operations. Mr. Blanch, the managing director, is at present at the mines, to organise the management there, and parties have been dispatched from England to erect the necessary furnaces for the reduction of the ores.

SALE OF MINE SHARES—ARE STAMPS REQUISITE?

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I have read with some interest, as a purser and as an adventurer, the letters which have recently appeared in your columns on the validity of the present mode of transferring shares in a Cornish mine worked on the Cost-book System. First, let me correct an error in the editorial remarks on this subject of the 2d inst., in which you observe "the laws of the Stannaries are confined to Cornwall and Devon." The court and jurisdiction of the Vice-Warden of the Stannaries, and what are termed the customs of the Stannaries, extend and operate only in the *county and Stannaries of Cornwall*, and do not extend to the *county or Stannaries of Devon*. "The laws of the Stannaries" are, therefore, confined to Cornwall; and although it would seem desirable, and it is, I hear, the wish of the adventurers in the Devon mines, that they also may enjoy the privileges and protection of the court and customs of the Stannaries, they have not at present those advantages—nay more, if you are correct in your observation, that the Cost-book System with its privileges is only co-extensive with the jurisdiction of the Stannaries' Court, it would follow that the mines of Devon, although nominally conducted on the Cost-book System, cannot claim its privileges, so as to exempt their companies from the jurisdiction of the Joint-Stock Companies' Acts. I express no opinion for the present on this question—a very important one to those who are adventuring in the Devon mines. I may also, as one of the practitioners in the Stannaries Court at Truro, correct a misapprehension entertained apparently by all your correspondents, who speak of evidence being admissible in the Stannaries Court, which would not be receivable in the superior courts of law and equity. This is a strange error; no evidence is received in the Stannaries Court which would not be equally admissable in the courts at Westminster. The common brokers' form of transfer of a mine share is not receivable in the Stannaries Court as a transfer, or agreement for a transfer, unless it is stamped; but the notice addressed to the purser of the mine, and signed by both vendor and purchaser, informing the purser, the common agent of all the copartners, of a sale having taken place between the parties, and requesting the purser to notice the change of partnership in the Cost-book, which is the minutes'-book of all the partnership transactions, is received in evidence in the Court of the Stannaries as it would be in any court at Westminster, in the light of an admission by both parties that the purchaser has become a member of the copartnership; in other words, it is a statement in writing by A. B., that he is the owner of certain shares in a certain mine, and, therefore, an admission by him of that fact.

Neither is the entry in the Cost-book that A. B. is an adventurer, nor the minutes such Cost-book may contain, receivable in evidence in the Stannaries Court against A. B. until he has himself signed the Cost-book, or by other sufficient acts declared himself to be one of the copartnership. But, by the custom of the Stannaries, after A. B. has signed the Cost-book, or by other sufficient acts declared himself to be one of the copartnership, he is bound by all acts and resolutions necessary or proper for carrying on the copartnership, adopted and signed by the majority of his copartners at any of their meetings, which he has had due notice to attend; and by proving such notice of meeting, and the signatures of such majority, the Cost-book becomes good evidence in the Stannaries, as well as in any other court of law or equity, against A. B. in respect of his liability upon such acts and resolutions.

With reference to the stamps upon transfers of shares, and the hesitation shown by certain pursers to receive or record the usual notices of transfer of shares in the Cost-book—the partnership minute-book—there is no ground whatever for their claim. *Notices*, as such, are not chargeable with any stamp duty, and the papers sent to the purser are *notices*, and not *transfers*, or *agreements* for transfers. The brokers have unadvisedly introduced into such notices a lengthy and unnecessary statement of the transaction; but this is mere surplusage; it is better omitted, because it may lead some pursers to imagine they are receiving the actual transfer, or agreement for transfer (both which would require to be stamped); whilst in fact they receive a mere notice of a change in the copartnership.

Permit me to add what is the general feeling here; that it is illtimed now, with so depressed a standard and the price of metal so reduced, and that the Government and the authorities at the Stamp-office act most injudiciously in raising so obnoxious and, as it seems, so unwarrantable a claim, to originate a new taxation on the mining properties of Cornwall.

I annex a form of notice of transfer, which will relieve pursers from all fear of accepting and recording it, which is equally effective with the brokers' longer form, and which would be good evidence in any court of law or equity of the admissions thereby made by the parties on proof of their signatures. In my own case upon a sale I neither take nor give any other document, as I have always considered the brokers' form of agreement for transfer objectionable and invalid; whilst the notice alone effectuates sufficiently the intentions of the parties. I have extended these observations beyond the limits I contemplated; but it will give me satisfaction if they are of any service to yourself or to your mining friends.—TRURONENSIS: *Truro, June* 12.

To the purser of Wheal ——, in the parish of ——, Cornwall.

SIR,—I beg to inform you that I have sold my —— share in the above mine, its ores and materials, to ——, of the parish of ——, and I request you to enter his name accordingly in the Cost-book of the said mine. Yours, &c., ——

And I, the above-named ——, hereby also inform you that I have purchased such shares, subject to the rules and regulations of the said mine, as entered in the Cost-book, being liable to the costs thereon, and to receive the profits thereof from the end of the month of ——. —— Yours, &c., ——

PREVENTION OF ACCIDENTS BY THE BREAKAGE OF ROPES.

SIR,—Having so frequently experienced your kindness in noticing my invention in your valuable Journal, I beg to hand you copies of a correspondence between Mr. Elliot and myself, the perusal of which will, I hope, prove satisfactory to you and your numerous readers interested in the welfare of the working miner. Since I brought my invention before the public last year, I have succeeded in simplifying it to my entire satisfaction, and have also obtained the following most desirable advantages:—1. The apparatus is now fixed upon the top and forms part of the cage, which removes the objection of extra weight, and also keeps the wedges freely in action, and always visible when at the top or bottom of the shaft.—2. It is also of great assistance by the action of the springs to the wire rope, by giving them an artificial elasticity, which has long been wanted.

These advantages, and a determination on my part to put the price for licenses upon a scale that shall be within the reach of all mine owners, will, I hope, ensure its general adoption, and thus secure the miner, at any rate, from one of those fatal accidents to which his hazardous occupation daily subjects him. The cages to which my apparatus are attached at Usworth Colliery are 7 feet 8 inches between the guides, and I am glad that I was so fortunate in the first instance to apply them to a shaft so much larger than those in general use in this and other neighbourhoods. EDWARD N. FOURDRINIER.

Cheddleton, Staffordshire, June 12.

TO GEORGE ELLIOT, ESQ., MONKWEARMOUTH, SUNDERLAND.

SIR,—Now that you have had two of my "Patent Safety Apparatuses" at work in your colliery, at Usworth, near Newcastle-upon-Tyne, since the 16th April, I hope you will consider that sufficient time has elapsed since its adoption to warrant you in giving me a report as to its efficiency. I am most anxious for your opinion of the invention, as many parties in this and other neighbourhoods are waiting the result of your trial, before putting it into their pits. I beg to thank you for the opportunity you have afforded me of bringing this patent before the mine owners in a working condition at Usworth.

Yours, &c., EDWARD N. FOURDRINIER.

Wearmouth Colliery, Sunderland, June 8.

"SIR,—In reply to yours of yesterday's date, wherein you ask my opinion of the utility of your "Patent Safety Apparatus," having had it in use for nearly two months, it affords me very great satisfaction to be able to speak so confidently of its merits. I have tested it several times at the Usworth Colliery with a load of 2 tons 8 cwts. upon it, and in every instance it proved successful in always stopping the load within *five inches* from the point it was at when the rope was severed. I have conferred frequently with Mr. Burlinson, engineer, of Sunderland, together with our own practical engineers at the different collieries under my management, all of whose opinions fully confirm my own—"That the application of your invention will fully provide against accidents to human life, resulting from the breaking of ropes or chains used for drawing up or lowering men into pits." I may also mention, that the springs have a very perceptible influence upon the wire rope, by diminishing the jerk when the engine is taking the lift and passing the centre. The depth of our Usworth pit is 170 fathoms, and the load raised from the bottom each time is 48 cwts. I have no objection to allow any person you may send to the colliery to see the apparatus, which is at work every day. You may make use of this communication in any way that may be of advantage to yourself in promoting the adoption of your invention, as it is my intention (if I can agree with you as to terms) to apply them to the other collieries under my care. Yours, &c., GEORGE ELLIOT.

DISCOVERY OF MINERALS IN AYRSHIRE.—A seam of meadow ironstone, of a rich quality, and near the surface, has just been discovered on the townlands of Irvine. The field has not yet been fully explored, but there is every likelihood that its working will not only improve the land, but add materially to the wealth of the town. Mr. Rollo has also discovered meadow ironstone on the Eglinton estate, in the Redburn, while investigating the cause of the peculiar colour of that stream. The same gentleman has also discovered a seam of ironstone, apparently of a very rich quality, and about 30 ft. in thickness, on the lands of Smeaston. It is a curious fact that a coal-pit had been sunk through this seam, without any discovery having been made of the nature of the stone. This is a discovery highly important to the lessee, the proprietor, and the Ayrshire Railway.—*Ayr Observer.*

THE SODA TRADE.—We are glad to learn that the Prussian Government has signified "that the increased duty levied upon the importation of chrystals of soda, which came into force on the 1st inst., in accordance with a decree passed on the 3d of March last, would not be enforced on such cargoes as were shipped from England previous to the declaration of the blockade of the Oder by the Danish Government, and which, consequently, have not been able to make a port; provided, however, the ships arrive within the present year." The duty, it must be remembered, has only been increased on *chrystals* of soda; and we rejoice to find that no immediate intention exists, on the part of Prussia, of resorting to any increase of duty on soda.—*Gateshead Observer.*

Mining Correspondence.

[The Commissioners of Inland Revenue having notified to us their resolve to charge with advertisement duty all reports having the agents' names affixed, we appealed to them in a memorial, setting forth that we, or the respective companies, derived no advantage therefrom—the only object sought, or obtained, being that of affording to the mine adventurer and public the greatest guarantee we could for the truthful and *bonâ fide* nature of the statements periodically set forth, by authenticating them, and thus fixing a responsibility on the writer. The Commissioners have replied, that "the reports, with names attached, are advertisements, and that duty will be charged thereon." We have no alternative but submitting to their dictum. How far the Commissioners are correct in the view they take, our readers can judge as well as ourselves;—we can but hope that, on reflection, they will see the error into which they have fallen, and rescind the orders they have issued. All reports inserted under this head, however, may, as heretofore, be considered as furnished by the regular agents of the company; and we shall carefully guard against the publication of statements which cannot be relied on as correct.]

BRITISH MINES.

ANTIMONY AND SILVER-LEAD.—We are dressing the lead for market, and hope to make a return next week equal to the Wheal Sarah Mine, which made 20*l.* per ton a few weeks since.

BARRISTOWN.—The lode in the end, driving on the junction, in the adit level, is about 2 ft. wide, with a solid branch of lead about 4 in. wide in it. The eastern stopes, in the bottom of the adit level, are now unwatered, and the lode looks well. The stopes in the back of the 16 fm. level are at present poor; the lode in the winze sinking under the 16 fm. level is poor. The adit end east is at present without a lode, and in the stopes in the bottom of the 16 fm. level, and also the 16 fm. end west, the lode is poor; in this end it is very large, composed of carbonate of iron and blende.

BEDFORD UNITED.—At Wheal Marquis, the lode in the 90 fathom level east is about 3 feet wide, and worth 2½ tons of ore per fathom. In Bailey's winze, in this level (the 90) the lode is 2 feet wide, and yielding 4 tons of good ore per fathom; and in Crews's winze, in this level, the lode is 18 in. wide, producing good work. The 70 fm. level is without much alteration; the lode is 4 ft. wide, and very promising.

BRYN-AR-IAN.—The lode in the engine-shaft is again become more settled, and at this time is yielding ¾ ton of ore per fathom. The lode in the stope back, over the deep adit level, east of the shaft, is 6 ft. wide, producing 1½ ton of ore per fm. The stope in the same back, east of the winze, is yielding 15 cwts. per fathom. The stope in the back of this level, 17 fms. east from shaft, is yielding 10 cwts. of ore per fm.; and the stope in the back of the shallow adit level is producing from 8 to 10 cwts per fm. We finished the water-wheel yesterday, and expect to complete the crusher to-morrow.

CWM ERFIN.—We have finished paying our people, and have measured our last month's bargains. In attempting to let our bargains for the coming month, we found there was a mutual understanding between the men that they would not take their bargains, unless they got an advance of wages, or rather price per fm., which we refused to comply with, and our bargains at present remain untaken; we, however, expect no difficulty in letting them, and we shall be better off in the end for it. The 20 fm. level east is worth 8*l.* or 10*l.* per fm.; the stope behind the end is worth 10*l.* per fm. The stope east of the engine-shaft is worth 10*l.* per fm. The sink under the 10 fm. level, for the length (12 fms.), is worth 18*l.* per fm. The end west of the whim-shaft, in the 20, is producing 2 or 3 cwts. per fm.

DEVON AND COURTENAY.—In the end driving west, in the 40 fm. level, the lode is 4 ft. wide, composed of white iron, prian, and mundic, yielding also some good stones of ore of the best quality. In the end driving east, in the 50 fm. level, on the south lode, the lode is 2 ft. wide, composed of capel, spar, and peach, producing also a leading branch of good copper ore, about 3 or 4 in. wide. The lode in the stopes, in the back of this same level, is without any alteration since my last report, producing about 1 ton of ore per fathom.

DRAKE WALLS.—In Brenton's engine-shaft there is no alteration since we commenced sinking below the 60 fm. level. The stopes east of Brenton's shaft, below the 50 fm. level, are producing about 2½ cwts. of tin per fm. In driving the 40 fm. level, west of said shaft, the branches are small and poor. In stoping down the machine-shaft, below the 50 fm. level, there is a little tin, but not rich. The stopes west of machine-shaft, below the 50 fm. level, are producing about 3 cwts. black tin per fm. The stopes east of said shaft, below the 50 fm. level, are producing 2 cwts. black tin per fm. In the 50 fm. level, driving east of this shaft, the ground is hard, and the branches are at present poor. The stopes below the 40 fm. level, east of the said shaft, are producing about 2½ cwts. of tin per fm. The stopes below the 33 fm. level, east of Footway shaft, are producing about 2½ cwts. of tin per fm. The 33 fm. level, east of Footway shaft, is producing about 2 cwts. black tin per fm. The stopes below the Tye level, east of said shaft, are producing about 4 cwts. black tin per fm. The stopes below the Tye level, west of this shaft, are producing pretty good work for tin. The Tye level, driving east of Footway shaft, is producing about 3 cwts. black tin per fm. The new engine-shaft, sinking below the adit level, is at present hard, and poor for tin. In driving the adit level, west from the Tamar river, we have a large lode; it is not cut through to the south wall as yet, therefore we cannot at present ascertain its exact size; it is producing good stones of tin.

EAST CROWNDALE.—We have not yet seen the lode in the 28 fm. level; it is pretty certain that it is thrown south by the course of elvan seen in the level above. The adit level, west on the course of the main lode, is holed to the 17 fm. level, east from Diamond's shaft. The 12 men engaged in these two levels it is decided to put to sink a winze below the adit level, on a good course of tin, and to drive north from Tippett's backs, in order to see the north lode. Tippett's stope, in the back of the adit level, is rather improved in the past week; the part now being carried is about 9 ft. wide, composed of peach, prian, spar, mundic, killas, and tin, worth about from 25*l.* to 30*l.* per fm. Paul's stope, to the east, is rather more difficult to break, in consequence of the killas giving place to peach and mundic, of which the lode is at present principally composed; it at present produces about 35*l.* worth of tin per fm. Our engine, pit work, and stamps, all in good working condition.

GREAT ROUGH TOR CONSOLS.—At Thomas's shaft, the cross-cut going through the lode is somewhat easier of progress, and altogether the lode is improving in character, containing less capels, with more spar and mundic, and a small portion of black ore intermixed. The water still continues to come out very strong from the present extreme point of the drivage, indicating that there is something of a more loose nature to be reached; there has been driven in all from the north wall of the lode 21 ft. At Morris's, in the cross-cut going north, and about 10 feet from the north wall of the lode, as you are already aware, a branch has been met with, containing some rich stones of grey and black copper ore, with an inclination to the north of not less than 6 ft. per fm.; there is no regularity of size; it varies from 4 inches to 1 inch, and will apparently fall in with the main part of the lode a few fathoms east of the shaft; at the present furthest point of the drivage, about 15 ft. from the shaft, another branch, about 2 in. wide, has been just intersected, containing mundic and a portion of black ore, with an inclination of about 6 in. per fm. northward; this branch will fall in with the former, a few feet below the bottom of the cross-cut, and into the main lode eastward; in cutting the plat in this level, more of the former branch, containing the grey ore, will soon be discovered; and so soon as this is done, you shall be immediately advised thereon. In the 30 fm. level, east of Morris's, there is no important alteration; the driving is being continued on some north branches adjoining the lode, which have a very promising appearance, containing mundic and spar, with black ore intermixed throughout; the ground continues favourable for driving.

HEIGNSTON DOWN CONSOLS.—The sinking of Bayley's engine-shaft progresses satisfactorily. The lode in the 35 fm. level, east of shaft, is still very large, and somewhat improved in character for mineral during the present week. The lode in Hitchins's shaft is of very promising character, being 2 ft. wide and producing a little copper ore in places.

HERODSFOOT.—The engine-shaft is 7½ fms. below the 106 fathom level, where the lode is 4 ft. wide, producing 1½ ton of lead per fm.; in this level north the lode is 2 ft. wide, producing half a ton per fm.; and in the south end it is 2 ft. wide, yielding 7 cwts. per fm.; the stopes in the back yield, on an average, 12 cwts. per fm. In the 94 fm. level north the lode is 15 in. wide, yielding half a ton per fm.; and in the south end it is 2 ft. wide, yielding good stones of lead; in a winze sinking below this level, 20 fms. north of Windsor's shaft, the lode is 2½ ft. wide, yielding good saving work; the tribute pitches, in the back of this level, are yielding fair quantities of work. In the 82 fm. level north the lode is 9 in. wide, yielding 15 cwts. per fm.; and in the south end it is 18 in. wide, yielding 8 cwts. per fm.; the stopes in these backs average half a ton per fm. In the 72 fm. level south the end has been suspended since our last report, and the men engaged in stripping down the side of the level, where the lode is split into branches—the main ore yielding 5 cwts. per fm.; the stopes in the back average about 7 cwts. per fm. In the 52 fm. level south we have just passed through a slide, which dips north 2 ft. in a fathom; under this slide the lode is small and poor.

HOLMBUSH.—The lode in the 132 fm. level, west of the diagonal shaft, is 10 inches wide, composed of spar, mundic, and stones of copper ore. The ground in the 120 fm. level south, east of Hitchens's shaft, is still improving; the lode in the 120 fm. level south is 4 ft. wide, composed of quartz, prian, and lead, producing about 4 cwts. of the latter per fm., and promising further improvement; we have also commenced driving south in this level, to intersect the flap-jack lode, close by the eastern side of the great cross-course, by six men, at 5*l.* per fm., and to work all the time (Sundays excepted), to reach the lode as quickly as possible, which we pledge ourselves to do, giving the men a month's extent. The lode in the 110 fm. level south, with the pitch in the back of the level, will produce about 5 cwts. of lead per fm. We have been driving by the side of the flap-jack lode in the 100 fm. level, east of the great cross-course, since last reported on, the wall of which is hard and smooth, and, as far as we can judge in this point, it is everything we could wish to see, especially when we consider that such a wall was, generally speaking, a true criterion of a good course of ore on the old or main lode, and our hope is we shall not be disappointed in this.

KIRKCUDBRIGHTSHIRE.—The lode in the 50 end east is 3 ft. wide, and still unproductive—the ground seems to be softening a little the last two or three days; the lode in the 50 end west is 2½ ft. wide, yielding 8 cwts. of lead per fathom—a very kindly lode. The lode in the 40 end west is 2 ft. wide; we have had a good branch of ore in this end this week, but at present it is not so well; the lode in the winze under the 40 east is 2 ft. wide, favourable for breaking, but poor. The sumpmen have been changing the work in the shaft this week.

LEWIS.—The ground is still favourable in sinking the engine-shaft below the 70 fm. level; the lode in the 70 east is 2½ feet wide, composed of spar, peach, prian, and spots of tin. The 70, east of engine-shaft, on south branch, is worth 6*l.* per fathom; the stopes in the back of this level are worth 15*l.* per fm. The 70, east of Ladder-road winze, on south branch, is worth 9*l.* per fathom. The 60, east from sump-shaft, on south branch, is worth 11*l.* per fm. The winze sinking below the 60, on south branch, is worth 26*l.* per fm. The lode in the 60 east, on Cock's branch, is 1 feet wide, producing some good quality tin-stuff; the stopes in the back of this level are worth 9*l.* per fathom. The winze sinking below the 60, on Cock's branch, is worth 14*l.* per fm. The 50, east of sump-shaft, on Cock's branch, is now communicated with the 50 west from copper ore shaft, on the same lode, where we have now 40 fathoms in length of good tribute ground, well ventilated. The lode in the 50, east of copper ore shaft, on Cock's branch, is 6 in. wide, driving at 10*s.* tribute. The 40 east, on Cock's branch, is opening good tribute ground. The lode in the 40 east, on south branch, is 1 ft. wide, worth 3*l.* per fm. The lode in the 30 west, on south branch, is worth 4*l.* per fm.

LOSTWITHIEL CONSOLS.—At your request I inspected the mine this day. The lode is looking better than I expected to find it; that part of the lode which I would call the mineral part is 2½ ft. wide, take it up and down the level—7 in. wide, a soft part; the capels also of the lode are 2 feet big, making in all 4½ ft. composed of spar, can. peach, mundic, with some spots of grey ore; some of the spar is soft, that is commonly called sugar spar; much greens are also to be seen in the heads, or joints, of the lode. I think it a lode well worthy driving on, though poor where cut through; but I think it probable, by driving south on the course of the lode, it will make ore—probably lead ore. The ground east of the lode is changed for the better. I should say the end will be driven for 4*l.* per fathom, or less.

MENDIP HILLS.—During the past week we have been engaged in making a cutting, for the purpose of draining Blackmoor, which, when completed, will take off the water about 6 feet deeper than it now is. We have also this morning commenced laying open a cutting in order to reach the bottom of Blackmoor, which will be done with as little delay as possible, and, when finished, we intend laying a tram road in the same, for taking the slags from this part of the valley to the dressing-floors. The carpenters are still busily engaged in making the necessary strakes and boxes for both Ubley and Blackmoor dressing-floors; in the former I hope to see the whole of the washing strakes and slime boxes fixed in their places by this evening, and in the latter we are fixing the jigging machines, &c. Charterhouse slag ground requires no particular comment, being precisely the same, both as regards quantity and quality, as it has been for some considerable time past—viz.: from 16 to 17 ft. thick, yielding slags that will produce 3 cwts. of metal per ton.

SOUTH WHEAL MARIA.—The lode in the 20 fathom level, east from the engine-shaft, is about 3 ft. 6 in. big, composed of mundic, prian, &c., with some excellent stones of copper. I am glad to say that the character of the lode has very much improved in the last 3 fms. driving, being much softer, and its appearance much more congenial to mineral than we have seen it at any time previous, and also the ground about it. We are now giving 4*l.* per fm. for driving.

SOUTH WHEAL TRELAWNY.—The engine-shaft is in course of sinking with nine men, ground more favourable than when last mentioned; sunk below the 30 fm. level 8 fms.; the lode has almost left us on the eastern side of the shaft, and is just the same as last mentioned with respect to size and strata, and is interspersed with spots of lead; it is also discharging more water. The engine continues to work well.

TREHANE.—The lode in the 68 fm. level south is 20 in. wide, composed of capel, mundic, carbonate of iron and lead, worth 10*l.* per fm.; in this level north the lode is at present small, but containing some good lead in places. In the 55 fm. level, 5 fms. south of the shaft, we are sinking a winze, where the lode is worth 1½ tons of lead per fm. The lode in the stopes in the back of this level is producing 8 cwts. of lead per fm. The lode in the back of the 45 fm. level is turning out about 7 cwts. per fm. There is no alteration to speak of in the cross-cut in the 30 fm. level west since last report. The parcel of ore sampled on the 2d inst. is sold at 20*l.* 10*s.* 6*d.* per ton.

TRELEIGH CONSOLS.—At Garden's shaft, ground the same as last week. In the 90 fm. level, west of ditto, lode 20 in. wide, worth 4*l.* per fm. The winze below the 70 fm. level will be completed in a few days, and the men put into the 60 fm. level. At Parent's engine-shaft the ground is much the same as last week. In the 20 fm. level, west of ditto, lode 20 in. wide, stones of ore; ditto, south of ditto, ground rather hard. Parent's whim-shaft is 8 fms. below the adit, lode 3 ft. wide, with stones of ore; in the winze, below the adit, on the middle lode, lode 1 ft. wide, with stones of ore and kindly appearance. We expect to sample on Tuesday next 80 tons of ore.

WEST WHEAL JEWEL.—In the rise in the back of the 70 fathom level, west of William's cross-course, on Wheal Jewel lode, the lode is worth 4*l.* per fm. In the winze in the bottom of the 57 fm. level, west of Williams's cross-course, on the same lode, the lode is worth 10*l.* per fm. In the 47 fathom level, west of Williams's cross-course, on the same lode, lode not taken down in the past week, when last taken down worth 3*l.* per fm.; in the deep adit level, west of Williams's cross-course, on the same lode, lode unproductive. In the stopes west of Pryor's winze, in the back of the 12 fm. level, on Tolcarne tin lode, the lode is worth 13*l.* per fm.; in the stopes east of Pryor's winze, in the back of the same level, the lode is worth 10*l.* per fm.; in the stopes in the bottom of the 12 fm. level, east of Tregoning's shaft, the lode is worth 12*l.* per fm.; in the stopes in the bottom of the 12 fm. level, east of Tregoning's winze, on the same lode, the lode is worth 14*l.* per fm. These stopes are working on tribute.

WILLIAM AND MARY WORTH.—On Saturday last I had the pleasure of seeing the tributers breaking some good specimens of silver ore from the ground I have before recommended, between Old Burrow and Oak shafts; they regularly send up several bags of work every day. There are two men and pare dressing the tin leavings of the late company at the Silver Valley Mine; there has been returned between three and four tons of tin. We calculate on returning before long 10 tons of tin from these refuse piles of leavings.

WHEAL TRELAWNY.—The cross-cut in the 82 fathom level, at Phillips's shaft, is extended 2½ fms. east towards the lode, where the ground is favourable for driving. The lode in the 72, north of this shaft, is 2½ ft. wide, and worth 7*l.* per fm.; in the same level south the lode is 2 ft. wide, and worth 16*l.* per fm.; the stopes in the back of this level are yielding a fair quantity of ore. The lode in the 62 fm. level north is 5 ft. wide, and worth 20*l.* per fm.; all the stopes in the back of this level are yielding a fair quantity of ore; the lode in the winze sinking under this level south is 1½ ft. wide, and worth 10*l.* per fm. Trelawny's shaft will be completed to the 72 fm. level by Saturday next. The lode in the 52 fm. level, north of this shaft, is 3 ft. wide, and worth 7*l.* per fm.; all the stopes in the back of this level are producing a fair quantity of ore, but the ground is recently harder than it was. The stopes in the back of the 42, north of this shaft, continue to produce a fair quantity of ore. At the north mine, the lode in the 55, north of Trehane boundary, is as was last reported. The lode in the 45 north is 1½ foot wide, and worth 4*l.* per fm. The lode in the 40, south of Smith's shaft, is 4 ft. wide, and worth 10*l.* per fm.; in the same level north the lode is 1½ ft. wide, and worth 4*l.* per fm. The lode in the 30 north is as last reported. The lode north of the winze, driving towards Smith's shaft, in the 40 fm. level, is 2½ ft. wide, and worth 6*l.* per fm. We expect to sample on Tuesday a parcel of lead ore, computed 106 tons.

FOREIGN MINES.

GUADALCANAL SILVER MINES.—The following report, received by the directors on the 12th June, they deem expedient to append to the original report:—

Guadalcanal, May 31.—We beg to hand you the following general report of our progress and prospects from the commencement of operations to present date. Upon our arrival here, at the end of July, 1848, our first work was to make a valuation of the buildings, machinery, stores, &c., on the mines, and having arranged with the commissioners appointed by the Spanish company, formal possession was given to us of the same, together with the mines; consisting of—1 pertenencia on a lode called La Chapparel; 1 ditto, Santa Casilta; 4 ditto, Santa Victoria; 4 ditto, Pozo Azual; 4 ditto, Pozo Rico, We may here mention that on the four first-mentioned lodes we have done nothing more than such work as was absolutely required to keep possession of the mines, in conformity with the Spanish mining laws, nor is there at the said mines anything in sight deserving of particular notice. It is, consequently, on the four pertinencias of Pozo Rico that we have been carrying on all our operations, as connected with the mines held from the Spanish company. Our first work was the removal of an old steam-engine, boiler and house, standing at Pozo Rico engine-shaft—sinking foundation of, and building our own engine and boiler house—and making a road from the mines, two leagues, in the direction of the town of Lorena, without which it would have been impossible for us to have got our machinery to the mines. This work was completed by the second week in October. On the 23d September the vessel with the party of men and machinery arrived at Seville, and having to encounter many delays and considerable difficulties, it was the 13th Nov. before we had conveyed the engines through the country to the mines. From this time our whole force was employed in erecting engine, capstan, shears, preparing shaft, and sinking pit work, and on December 26, we had the satisfaction of getting the engine to work. By January 17, 1849, we had forked the water in Pozo Rico engine-shaft to the 31 fathom level, where we discovered portions of the lode standing as arches, whence we broke ore of the extraordinary richness of 4850 ounces of fine silver to the ton. Our work from this time was erecting whim, putting in footways, and easing down and dividing whim-shaft from engine-shaft, cutting plat, and preparing cross-cut of 8 fms. from shaft to lode, for angle bobs and rods to work the lift for unwatering diagonal shaft sunk on the lode. This work, with our small force of six sumpmen only, occupied us fully until the commencement of present month, when we dropped our lift in said diagonal shaft, and by the 21st instant, had forked the water to the 51 fm. level. On the 11th April, our force having been increased by the arrival of 20 men, we immediately set them to clear up the 17 fm. level, San Antonio, south of Pozo Azuaga, as also the Pozo Azuaga shaft. Here we have erected a whim, and have unwatered this shaft to the 17 fm. level, which will enable us to hole the corresponding level, San Antonio. We also set men to clear up the 31 fm. level, Pozo Rico, and now have the end in which the lode is standing, and on which we have driven 3 fms. The lode is large, and its productive part about 15 in. From assays made we find it to be worth upwards of 50*l.* per fm. In February last, finding that the Pozo Rico lode was out of the Spanish company's pertenencias, three new pertenencias were denounced, two north, and one south of Pozo Rico engine-shaft, called—1. La Maria Rosalia.—2. San Guillermo.—3. La Bonita. In our endeavours to discover the Pozo Rico lode in La Bonita pertenencia, we discovered three other lodes, besides branches running obliquely to andat different angles to the Pozo Rico lode, all of which form a junction in this pertenencia, about 1·0 fms. south of the Azuaga shaft, at which point there is to be distinctly seen, at surface, a gossan from 4 to 5 fms. wide, which, we consider, considerably enhances the value of the mines. There is no doubt of this being a most valuable acquisition, or that the working of it will result in great profit to the adventurers; and it is with some impatience we are looking forward to drive from the Pozo Azuaga 17 fm. level south, to intersect these lodes, where we shall take them, in places, at a depth of 17 or 20 fms. At La Maria Rosalia we have sunk a 10 yards haft, and are driving to cut the lode at La Bonita; we have also sunk a 10 yard shaft, and have cut one of the caunter lodes, which at this trifling depth does not present any alteration to its appearance at the surface. The above constitutes the principal work completed during the eight months we have been here (reckoning from the arrival of our first party of men), and we trust it is evident no time has been lost in any way. Our prospects are most encouraging, and will, doubtless, be gratifying to all parties interested in the association. The discovery of the lode in the 31 fm. level, and its productiveness, together with the arches of richer mineral, and also the lode in the 20 fm. level, enables us now to declare the mine in produce; whilst the discoveries we shall no doubt make in the 41 and 52 fm. levels, when able to enter the same (which will be in the course of a very short time), will enable us to declare the mine in profits as well as produce. From the correctness of the old plans, and the nature of the lode where standing, we see no reason to doubt for a moment but that we shall discover (as represented) the lode in the bottom of the mine in all its richness, and it will be our endeavour to get down to that point without the loss of a day. It is gratifying to report that the whole of our party (38 in number) continue in excellent health, and that the best understanding exists between them and the resident population of this place.

IMPERIAL BRAZILIAN MINES.—*Bananal, April* 3.—At Gongo, the only alteration I have to mention is that the rubbish near Goldsmid's stamps is nearly exhausted, and before my next we shall, probably, have commenced taking that machine to pieces, in order to extract at Walker's stamps any gold which may perchance yet remain buried in its foundations.

Bananal.—At this place our cross-cuts westward in the adit level, from near Wray's and Goldsmid's, and from between Thomas's and Hollingsworth's shafts, are continued without alteration. The cross-cut in a similar direction from Walker's shaft, in the 14 fm. level, has intersected the vein; but it is very small, although it affords a tolerable sample of gold. Our 7 fm. level, northward from Walker's cross-cut, continues to follow the direction of the vein, which at present is scarcely more than a line between two hard walls. As we sink Thomas's shaft we see specks of gold in the vein; but what we have lately broken there is fit only for the stamps. A portion of the vein southward of the shaft, however, gave the last work for the washing-house obtained from this neighbourhood, and this we shall try during the present week, after the shaft has been sufficiently secured with timber, on which we are now engaged. We are stoping away some vein stuff in the back of the 7 fm. level, both north of Thomas's and south of Hollingsworth's shafts, but it is of very low quality in both places. We continue to sink on the big pump vein, below the 6 fm. level; we see specks of gold frequently, and have taken a few hands' full for the washing-house in the past 10 days; generally speaking, however, the vein is small and poor. I lament to say we are no longer able to supply the stamps regularly with stone worth crushing.

April 13.—Gongo continues without alteration.

Bananal.—At this place the cross-cut, west of Wray's shaft, in the adit level, continues without alteration; but that in the same direction from Goldsmid's shaft has, since the date of the captain's report, entirely penetrated the jacotinga. We must now drive on any traces of the vein we may have intersected; but nothing has been cut which can be said to resemble it in other parts of the mine. We have a rise about 2 fms. above the cross-cut in the 14 fm. level, west of Walker's shaft; but the vein in it is split into several minute strings, and our samples do not at present afford any gold. The vein had so dwindled, and the rock near it had become so hard in the 7 fm. level, north of Walker's cross-cut, that we have turned a little towards the north-west in search of softer ground. We are continuing to stope away the vein in the back of the 7 fm. level, north of Thomas's shaft, but the produce at the stamps is very trifling. At Thomas's shaft most of the time since my last has been employed in timbering, and we have not sunk on the vein; some portion of it in the southern end of the shaft has been stoped, and one box of rather inferior work has been obtained for the washing-house, the rest has been carried to the stamps. We continue to sink below the 6 fm. level, on the big pump vein, and now and then obtain a hat-cap of work for washing, the greater part, however, serves only for the stamps. The cross-cut westward in the adit level, between Thomas's and Hollingsworth's shafts, is much as it has been for some time, and there is no alteration to report in the stope above the 7 fm. level south of Hollingsworth's shaft. The stamps have been tolerably supplied, but can scarcely be said to have been regularly at work.

GOLD REPORT.

	From Gongo.	From Bananal.	Total.
From 23d March to 12th April ...	*Lbs.* 9 9 5	11 6 5	21 3 10
Total from 1st January, 1849 ..	53 5 13	70 3 16	123 9 9

NATIONAL BRAZILIAN MINES.—*Cocaes, April* 2 *to* 12.—At Hartley's eastern stope there are a great number of people stationed, who are stoping on the Cavaco veins in the usual direction, about south 72° east, but within the last day or two the lode appears to have turned a little towards the east, which is much in our favour, as regards the future operations, for it will most likely prevent the head wall from coming in contact with the foot-wall of the veins. The produce of gold for the past 10 days has been rather little, but the samples obtained from this place are very encouraging; and as the gold has been seen in the stone almost every day, we have reason to expect better things.

Cuiaba, April 6.—Although the lode at these stopes is much harder, and has not so favourable an appearance as it has east of the slide, yet the four samples taken from it during the past week produced much better than those taken from the floors of the lode at Hartley's level. This is a most favourable and important circumstance, as the lode west of the slide is doubtless entire, and is already discovered to be above 6 fms. wide.

Produce—Cocaes, 25th March to 13th April	*Mts.* 9	5 3 3
„ Cuiaba, 26th March, to 6th April	2	1 3 5
Total ..... *Mts.*	11	6 6 8

ST. JOHN DEL REY MINES.—*Morro Velho, April* 7.

Produce for March, 22,177½ oitavas, about 213·24 lbs. troy; 22,172 oits., from 6050 tons of ore, yielding 3·66 oits. per ton; 5 23-72 oits. tribute from Feixos=22,177 23-72.

Considering how severely we suffered from the unprecedented fury of the storm on the 4th March, as detailed in my diary at the time, this produce has I own exceeded my expectations, and will, I trust, be satisfactory to the board.

Stamps working during the month average 91 6-10 heads.

Supply of Stone: During the last 15 days great exertions have been made to send up from the mine an extra supply of stone, to keep our stamps going during the three days which the mine had to be idle—say, Good Friday, Easter Sunday and Monday. One of these is past, and I have good reason to hope we shall get well through the other two; but after the holidays, I apprehend, the supply must considerably fall off, more especially as for some time we must not keep so many borers on the middle cachoeira, the most productive part of our mines, until the sump shall have been further sunk. After the holidays, 10 borers will, consequently, be removed from them to the east cachoeira.

Cost of March Rs. 41,825 105 at 24½	£4313	4 3
Produce..... 22,177 23-72 oits.		
Less duties, 7 per cent. 1,552 23-72		
Net ..... 20,625 oitavas, at 7s. 7½d.	7841	15 11
Leaves	£3528	11 8

TYWARNHAYLE AND NANCEKUKE MINES.

The following report, from Mr. R. Taylor, under date 5th inst., affords the latest information we have received as regards this property, which we are given to understand is about being worked by a party of private adventurers, to which we have referred in another column:—

South Towan.—We have a large and promising lode in the 64 fm. level driving east

United Hills.—In the 90 fm. level, east from Gardiner's engine-shaft, the lode is 6 ft. wide, and will turn out 2½ tons per fm.; in the 90 fathom level west from this shaft, the lode is 6 ft. wide, and yields 3 tons of ore per fm. In the 80 fm. level, east from Bennett's shaft, which is the most eastern shaft in this mine, the lode is 7 ft. wide, and yields 4 tons of ore per fathom. In the 70 fm. level, east from Bennett's shaft, the lode is 18 in. wide, and produces 1 ton of ore of good quality per fm. The 60 fm. level, east from Bennett's shaft, has recently improved, the lode in it is 2 ft. wide, and is yielding from 3 to 4 tons of ore per fathom. Gardiner's whim-shaft has been holed to the 90 fm. level, and will soon be squared down and put in working order to that depth. The 80 fm. level, driving west from this shaft, is a promising level; the lode in a winze, sinking under the 70 fm. level, about 20 fms. before the present end of the 80 fm. level, is 6 ft. wide, and produces 4 tons of ore per fm. The 80 fm. level, west of James's shaft, on the new north lode, will turn out 5 tons of ore per fm. The inclined plane railroad has just been completed from the 70 to the 80 fm. level in this shaft; the waggon works well, and we are now prepared to draw the large quantity of stuff which we may expect to break from the new north lode. Barkla's winze, in the 70 fm. level, west from James's shaft, having been completed to the depth of the 80 fm. level, we shall now drive east from it to meet the level coming west from the shaft, and shall thus very speedily lay open a fine piece of ore ground; this winze passed through a good course of ore, the lode varying in size from 4 to 5 ft., and yielding on the average 4 tons of ore per fm. for the whole depth. In the western winze, under the 70 fm. level, which has been sunk between 9 and 10 fms., the lode is 6 ft. wide, and turns out about 3 tons of ore per fm. In the 70 fm. level the lode is large, but not rich; there is a good course of ore in the winze sinking under the 60 fm. level about 20 fms. before the 70 end, turning out from 5 to 6 tons per fm.—this winze has nearly reached the depth of the 70 fm. level. We have commenced driving on the new north lode, from the cross-cut in the 70 fm. level; in going east the lode is 7 feet wide, and yields 7 tons of ore per fathom; in the western end it is 5 ft. wide, and turns out 6 tons per fm. The lode in the back and bottom of the level, as far as we have gone, looks equally well as in the ends.

Wheal Charles.—In Bateman's engine-shaft the lode is 3 ft. wide, producing some ore, and looking more promising. Muncton's shaft has been sunk on the underlay of the lode, 15 fms. below the 40 fm. level, the lode in it is poor. In Hampton's winze, which is sinking under the 40, about 20 fms. to the west of Muncton's shaft, the lode is 5 ft. wide, and turns out 3 tons of ore per fm. In Jeffery's winze, sinking under the 40 fm. level, 42 fms. west of Muncton's shaft, the lode is 4 ft. wide, and yields 3 tons of ore per fathom. We have recently met with a good bunch of ore in a rise upon a lode which we cut by a cross-cut, south from Muncton's shaft, in the 40 fm. level; the lode is 2 ft. wide, and turns out 3 tons of good ore per fathom.

Wheal Sparrow.—The lode in the 40 fm. level west is small, and producing a little ore, but we can open ground very speedily here, and hope we may soon find the lode improve. The 30 fm. level west, on Stacey's lode, which is south of the main lode, is 15 in. wide, producing half a ton of ore per fm. In a winze, sinking under the 30 fm. level, on this lode, it is 3 ft. wide, and yields 1½ ton of ore per fm. The quantities of ore which we have sold from these mines since they have been worked on the Duchy account are as follows:—

	Tons.	Value.		
1848.—March	141	£ 503,	the produce of	2 months.
May	228	554	ditto	2 ditto
August	480	1709	ditto	3 ditto
October	329	1161	ditto	2 ditto
December.....	610	2168	ditto	2 ditto
1849.—February	611	2473	ditto	2 ditto
March	339	1877	ditto	1 ditto
April	448	2147	ditto	1 ditto
May	360	1540	ditto	1 ditto
June...	420,	for sale on the 7th instant	ditto	1 ditto

I think we shall have no difficulty in maintaining the present rate of produce, say 400 tons per month, from the ore ground which is properly laid open for working; and, as soon as we have holed the 80 fm. level west from Jane's shaft to Barkla's winze, and which we may hope to do by the end of this year, we shall be able to increase our quantity considerably. The steam-engines employed upon these mines are five—namely: Gardiner's, which is an 80-inch engine; South Towan engine, which is a 70-inch; and Taylor's, which is a 58-inch cylinder engine; Wheal Charles, which is a 33-inch cylinder double-acting engine; and Gardiner's whim-engine, which is a 20-inch cylinder. The whole are in good working order.

MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

Wheal Oak.—This mine is situated in the parish of Wendron, about one mile east of Helston, and in one of the greatest mineral districts in Cornwall, being surrounded by the following mines—Wheal Trumpet, Wheal Ann, and the Crane, north; Wheal Whidden, Tremenheere, and Wheal Lovel, east; Trevethickwood, Silver Hill, and Wheal Helston, south; and Wheal Trannack, Gwavas Wheal Fortune, Great Wheal Vor, and many others, west. Several of these mines were worked for a very long period, and gave immense profits to the adventurers; whilst others are now in full and profitable working. Wheal Oak, from its well-known locality, and the inexpensive way in which it can be developed, is not to be surpassed in the county, and has been many times eagerly sought after; but the late proprietor of the estate, who resided on it for nearly three-quarters of a century, would never consent to its being worked. Old workings of some of the above-named mines were brought to the very boundary of the estate, when they were obliged to stop. The strata in the east part of the mine is white and grey granite (and proved most productive in the adjoining setts), and in the west part grauwacke and soft clay slate, traversed by many cross-courses, and there are several elvan courses running through the mine in a near direction with the lodes, which are known to be, particularly in this neighbourhood, highly nutritive to metalliferous veins. The sett is very extensive, and contains nearly all the lodes which proved so profitable in the great mines above named, situated east and west of Wheal Oak, and of which upwards of twenty are known to have been worked, and realised large fortunes for the shareholders. This mine has been but a short time in operation, and as yet but superficially worked. The engine-shaft is sunk rather more than 40 fathoms. An 18 fm. level is driven 15 fms. west and 25 fms. east from the shaft; also a 34 fm. level 5 fms. west and 20 fms. east of ditto, and in this level there is now a very rich lode of copper ore, tin, and iron pyrites, from 2 to 3 ft. wide, in which copper predominates. The level is at present in the grauwacke; but will in a very few fathoms enter into the granite, where there can be no doubt of a rich and lasting lode. From the present levels the adventurers have already returned upwards of 700*l.* worth of tin, and at this moment have several tons of copper ore on the mine, with the prospects regularly improving in sinking as well as in driving east towards the granite. The present adventurers have driven a deep adit south more than 120 fathoms in the western part of the mine on a cross-course, and it is calculated the above-named lode will be intersected in less than 10 fms. more, which will probably be accomplished within another month, at about 45 fms. from surface, being nearly 5 fms. deeper than the bottom of the mine at present. The water is drawn to surface by aid of a water-wheel engine, by which ma-

chinery the mine can be worked to a very much greater depth, having at all times sufficient water at surface for such engine to drain all the lodes. The value of this extensive sett is considered very great—such, indeed, as cannot be easily estimated—and its equal has been rarely met with in any mining district.

[From the *Plymouth Journal*.]

WHEAL CALSTOCK.—The lode has been cut upwards of 70 fms. to the east of the pitch now working, at 12 fms. deep; it is composed of ore and can, but having been cut into only 17 inches, more cannot be said than that it is a most important discovery. The ground near the lode is very favourable, the cross-cut having been driven at 50s. per fm. The other parts of the mine are without any material alteration.

TAVISTOCK CONSOLS (late Wheal Ash).—A general meeting of the adventurers was held at the purser's office on the 7th inst., when Capt. Edwards' resignation was received and accepted, with regret, by the shareholders present, and Capt. John Lean appointed as his successor. The captain's report was received and approved of, and the meeting adjourned to the 21st inst.—*Report:* The engine-shaft has been sunk 23 fms. under the adit, or 40 fms. from surface; the lode is from 3 to 8 feet wide, and in some places it has been much larger; in the shaft it is from 4 to 5 feet wide, composed of mundic, with a little peach and spar; the underlay is regular, about 1 ft. in a fm.; the walls are well defined. An adit level has been driven on the cross side of the lode, and the present end is large; its breadth has not been ascertained, only 3 feet of the north part being carried in this end. This lode has, as far as seen, an extraordinary appearance, and if it does not make a rich course of ore I shall be very greatly disappointed. There are two other large lodes within 50 fms. of the one referred to, which underlay north, and there is a fourth lode, which is considered to be the Wheal Anderton lode. Should the north lode cut rich, these parallel lodes will greatly enhance the value of the sett.

BIRCH TOR AND VITIFER.—A general meeting was held at the secretary's office, on the 7th inst. (John Bayly, Esq., in the chair), when the captain's report was read and approved; a full statement of the accounts of the mine from its commencement to the present time, signed by the purser and auditors, was produced, inspected, and passed. A resolution was passed, directing that the 160-1280th shares in the hands of the company should be submitted for sale to shareholders only by tender, but that no tender of less than 5*l.* per share be accepted. A committee, consisting of Messrs. Bayly, Page, Pawley, Trickett, G. Trickett, H. Luscombe, and C. Shepherd, were appointed. Capt. Dunstan's salary was increased 1*l.* 1s. per month. There is no change worthy of notice in the prospects of the mine since our last report.

WHEAL VINCENT MINING COMPANY.

The usual two-monthly meeting of shareholders was held at the Bull Hotel, Bishopsgate, on Wednesday, the 18th inst.

J. PARLEY, Esq., in the chair.

The accounts having been examined and adopted, a call of 3s. per share was made for discharging some liabilities and future operations.—The captain, who was present, presented his report, as well as a letter received that morning, apprising of an important discovery since he had left. He entered into a full explanation of the present position and prospects of the mine, clearly proving to the meeting that they were in possession of a mine that would shortly be without the necessity of further calls.—A deputation of two gentlemen was appointed to visit the mine, for the perfect satisfaction of the shareholders generally—nearly the whole of whom were present.

The following report, from Capt. Spargo, was read:—

My weekly reports, which are regularly published in the *Mining Journal*, are in strict accordance with our progress from the first, and I can only repeat that, if the lodes continue as at present, we have a paying mine. Our main engine-shaft is now down nearly 8 fms., in a beautiful soft granite, quite congenial for tin. The shaft on the south lode is just the same depth, where we have opened some good tin ground. The tributers to the west of the shaft are raising some splendid work indeed. We do not intend to sink this shaft with stoping 3 fathoms each side of it, therefore the shaft will be always the deepest; there will be 7 fathoms of stopes, together with the length of the shaft; in doing this we shall always be opening more tin ground, as well as proving the lode as we go down, which I do not hesitate to say will pay well; in doing this our whim will drain the lode, so that the stopes furthest east and west may be stoped dry, as the shaft will be the deepest, and enable us to throw up a quantity of tin monthly. I never saw a young mine more likely to continue and make good returns than this. The north lode is much improved, and we are not driving the deep adit as yet, but are sinking a winze in the bottom of the shallow adit on the course of the lode, as this winze will serve for communicating, as well as prove the lode in going down. In sinking here we are breaking excellent work, and are opening some good stopes each side of the winze; it will, therefore, be necessary to erect more stamps, as the tin stuff now breaking will more than keep going the present ones, and when we commence stoping we shall be breaking a good deal more—in fact, we anticipate immediate profitable results.

GENERAL MINING ASSOCIATION.—A meeting of shareholders was held yesterday at the offices, pursuant to notice, for the purpose of confirming, or otherwise, a resolution passed at a meeting, held on the 31st May, for reducing the number of directors to six, exclusive of the one appointed by the representative of H.R.H. the late Duke of York. Our reporter attended; and notwithstanding the evident desire on the part of the shareholders expressed at the last meeting, that their proceedings should be open to the press, that they might assimilate a little better with the age, and avoid all insinuations of hole and corner doings, the directors, who like too many old women millionaires, are half a century behind the times, refused us admittance, with the oft repeated palliative, regularly resorted to when directors of public companies dislike publicity—"We only admit proprietors; and if there is any thing desirable to report, we will send the particulars." We trust Mr. Kettle and his friends will still persevere to raise this company to that position which it ought to hold among joint-stock societies, which can never be while the directors are allowed to follow their own exclusive and erroneous views, by which the community naturally infer, that their is something behind the curtain to which they are ashamed to give publicity.

GRAMBLER AND ST. AUBYN.—A meeting of adventurers was held on Tuesday last, when the following accounts for four months ending April were passed:—By balance from last account, 78*l.* 7s. 7d.; ores sold (less dues), 639*l.* 16s. 6d. =718*l.* 4s. 1d.—To costs and merchants' bills, 407*l.* 8s. 7d.: balance in favour of the adventurers, 310*l.* 15s. 6d.

PENZANCE CONSOLS.—At a meeting of adventurers, held on the 11th inst., the accounts for the five months ending April were presented by the purser (Mr. Thomas Carthew), examined, and allowed. The expenditure, with a balance contra from last meeting, was 678*l.* 17s. 3d.; and the receipts, (including call of 102*l.* 8s.) 493*l.* 10s. 3d.: leaving balance against the mine of 180*l.* 7s. A call of 4s. per share was made.

WHEAL SETON.—A meeting of adventurers was held on Monday last, when the accounts for March and April, of which the following is an abstract, were passed and allowed:—By balance from last account, 169*l.* 3s. 5d.; ores sold (less dues), 3584*l.* 13s. 7d.=3753*l.* 17s.—To costs and merchants' bills, 3345*l.* 17s. 8d.: balance in favour of the adventurers, 407*l.* 19s. 4d.

WEST PAR CONSOLS TIN AND COPPER MINE.—This mine is situated at Tregrehan, in the parish of St. Blazey, Cornwall, extending 500 fms. on the course of the lodes, and ¾ mile from north to south. It is in one of the finest mineral districts in the county, and surrounded by the setts of Fowey Consols, West Fowey Consols, Par Consols, East Crinnis, Pembroke, Great Crinnis, and part of Charlestown United Mines, all which have returned enormous profits—many of the principal lodes are supposed to run through the sett; others are parallel with some of those of the richest mines—a fact in mining of much importance. It is within a mile of two shipping ports, held for 21 years; at 1-15th dues, and is divided into 1024 shares, of 10*l.* per share, with a deposit of 5*l.*, and no further call guaranteed for 12 months, probably not at all. Reports from Messrs. J. Hitchens, H. Williams, and J. Brenton, mine agents, speak highly of the capabilities of the district, and describe it as likely to prove one of the finest speculations in Cornwall.

THE DUCHY OF CORNWALL.—The income of the Duchy of Cornwall for the year 1848 amounted to the sum of 67,521*l.*, and the expenditure to 62,732*l.*, leaving a balance in the hands of the receiver-general of 4,789*l.* 15s. 5¾d.

CONSETT IRON-WORKS—(*From a Correspondent*).—The large quantity of 218 tons of pig-iron was produced from one blast furnace at these works during last week (six days). This is the greatest quantity ever produced by one furnace, and proves the superior quality of fuel and ore of the county of Durham.

BRITONFERRY IRON-WORKS.—It is with much regret we learn, that the iron-works recently established at this port are brought to a stand—the workmen, with but few exceptions, having been all paid off on Saturday last. This stoppage, although temporary, will be severely felt in the neighbourhood of Neath.—*Cambrian.*

EXPLOSIONS IN COAL MINES.—Lord Brougham, in the House of Lords, last evening, presented a petition from the South Shields Committee, for the prevention of accidents and better ventilation of mines, praying for the adoption of measures to prevent explosions in mines. He explained that, on a former occasion, he did not say that Watt had any invention for ventilation of mines: he had purposely witnessed an explosion, and came to the conclusion that artificial means of ventilation must be adopted. Had he turned his attention to it, he had no doubt he would have employed steam.

WINDING-UP RAILWAYS.—Official managers are to be appointed for the winding-up of several defunct railways, and notice has been given by the Masters in Chancery charged with their winding-up, that until the parties calling themselves creditors shall come in and prove their debts, they will be precluded from commencing or prosecuting any proceedings. Amongst the number are the Cambridge and Colchester Railway Company, the Warwick and Worcester Company, the Eastern Counties Extension Railway, the Cambridge and Worcester Direct Railway, Hereford and Merthyr Tidvil Junction, Ipswich, Norwich and Yarmouth, Gloucester and Aberystwith, and Central Wales, Manchester, Southampton, and Poole, Direct London and Exeter, and Worcester, Tenbury, and Ludlow.

THAMES TUNNEL COMPANY

The number of passengers who passed through the Tunnel in the week ending June 9 was—No. of passengers, 16,816.—Amount of money, £65 1s. 4d.

CURRENT PRICE OF GOLD AND SILVER.

Foreign gold, in bars	per oz.	£3	17	9	New dollars	per oz.	£0 4 9¼
„ Portugal pieces....		0	0	9	Silver in bars (standard)		0 4 11½

VENTILATION OF MINES.

We have just received the draft of a bill prepared and brought before the House of Commons, by Mr. T. Duncombe, Mr. Aglionby, and Mr. Hume, "to provide for the better ventilation of mines and collieries, for the protection of the lives of the persons employed in and about the same, and to make other provisions relating thereto." The bill appears to be well adapted as a remedy for the evils it is intended to cure, and as the Government have so long complained of inability to bring forward a bill from press of other important business, we trust they will not ape the dog in the manger, but heartily join with the promoters to carry it through the Legislature. After premising that the existing laws are not sufficient for the protection of the collier, it makes it lawful for Her Majesty, by warrant, to appoint, during pleasure, three fit persons to be inspectors of mines and collieries, and also from time to time, at pleasure, to remove any of the inspectors, and to fill up vacancies by death or otherwise. —In clause 2 their salaries are to be paid by the Commissioners of the Treasury; sums to be filled up. Clause 2 defines their duties; they are to be appointed to districts, and every inspector is to visit each mine in his division four times, at the least, in every year; they are empowered to enter and examine every part of a mine or colliery, and the works, buildings, and machinery belonging thereto, at all times and seasons, by day or night, to make inquiry into, and touching the state and condition of, any mine or colliery, the mode of working and lighting the same, and all matters connected with its safety, or tending to produce bodily injury to persons employed therein. They are authorised to examine any parties on oath, and to summon and require any person on the spot, or elsewhere, to give evidence; and if they find anything defective or dangerous, they are to give notice to the owner to repair or improve the same, which if not done within a reasonable time after notice, he forfeits 100*l.*

By clause 4, sub-inspectors are to be appointed, who are to have like power with the inspectors; they are to superintend, under the directions of the inspectors, the execution of the provisions of the Act, and are required to visit any colliery, on notice from miners, or colliers, employed therein, and report to their inspectors.—By clause 6, an office, to be called "The Office of Inspectors of Mines and Collieries," is to be established in London or Westminster, for the use of the inspectors, and the safe keeping of all records and plans relating to collieries.—By clause 8, every owner of a mine, or colliery, from which coal shall be raised within two months after the passing of the Act, is to forward to the office a notice, containing his name and address, a description of his colliery, number of persons employed, mode of working, name of firm, with a map, or plan, of the workings, and to repeat the same once in every year afterwards.—Clause 9. On an accident happening, by which any person is so injured that he cannot go to work next morning, notice is to be given to the nearest sub-inspector within 12 hours, who is to visit the colliery, and report to the office in London within 24 hours. He is empowered to take a surgeon with him, who is to receive a fee, not exceeding 10s.—Clause 11. Secretary of State may empower inspector to bring actions on behalf of any person injured for the recovery of damages; and, in case of death, such action to be brought for the benefit of the wife, husband, parent, &c., the same as if the party injured had been alive, and sued for damages.—Clause 14. Coroner to give two days' notice of every inquest.—Clause 19. Only one action to be brought in respect of death, and that to be within 12 calendar months.—By clauses 21 and 22, the wages of colliers are to be paid by the actual weight of the coal brought to surface, and not by measurement, as heretofore; to be paid every two weeks, and no money to be paid to one workman on account of another, but each to be paid separately.—Clause 24. An abstract of the Act is to be hung at the entrance of every colliery.—Clause 27. No person to be an inspector or sub-inspector who has not had 10 years' practical experience, and sufficient education to enable him to report.—By clause 28, no gunpowder is to be used in a fiery mine, under a penalty of not more than 20*l.*, or less than 5*l.* All expenses are to be paid out of the Consolidated Fund. If owners use all due diligence, servants who commit the offence to be liable. The remaining clauses up to 52, relate to the modes of summoning offenders, bringing actions, receiving evidence, appeals to the quarter sessions, &c.; and the whole appears to have been compiled with much care and forethought, although it contains several proposed enactments which we have no doubt will rouse the opposition of the coalowners, which, however, must not prevent so desirable a measure becoming the law of the land.

PREVENTION OF ACCIDENTS FROM ROPES BREAKING.

This morning, just as we were going to press, we received the following communication, certifying to the completely successful working of Mr. Fourdrinier's apparatus for arresting the cage in the shaft, in the event of the rope, or chain, breaking, and which fully bears out the correspondence on the subject in another column, and our remarks thereon, in some observations on the necessity of legislative colliery inspection:—

Unworth Colliery, June 14.

We, the undersigned, having met for the purpose of witnessing some experiments with an apparatus recently patented by Mr. Fourdrinier, for the purpose of arresting the fall of the cage and tubs in case of breakage of rope or chain, hereby declare our perfect satisfaction with the apparatus: have seen the cage with two full tubs, weighing in all two-and-a-half tons, stopped instantaneously upon the disengaging of the rope; and we have no hesitation in stating that it will prove highly important, both for the saving of life and also the damage of the shaft, which would otherwise take place—we, therefore, certify to the above effect.

Matthias Dunn, colliery viewer.	Henry Londgridge, colliery viewer.
George Elliot, colliery owner and viewer.	John Elliot, ditto.
George Southern, ditto.	Ralph Coltart, engineer.
John Taylor Ramsey, colliery viewer.	William Burlinson, ditto.
Edward F. Boyd, ditto.	Thomas Butson, ditto.
Septimus Bourne, ditto.	John Bell, jun., ditto.
Christopher Crondale, ditto.	Wm. Reid Clanny, M.D., F.R.E.E.
James Crondam, ditto.	Rev. Lewis Morgan.
H. T. Morton, ditto.	R. S. Newall, *per* W. Spenser.
R. H. Philipson, ditto.	

ACCIDENTS.

Explosion at the Hebburn Colliery.—An inquest on 32 of the sufferers by this explosion which we recorded in our last, was held on Wednesday week, the 6th inst. The surgeon having given his evidence that all had met with their deaths by the explosion, some being burnt, and others killed by the after-damp, William Bell, the man who was recovered, said all he knew was that he felt the wind, and was knocked down and made deaf by it. He knew no more about it; the air was always good, and he worked with a naked candle. Mr. Easton, viewer and part owner of the colliery, stated, that at the time of the explosion the men were working at Bensham seam of the A pit, at a depth of 161 fathoms; the diameter of both shafts for air was 12 feet, and the air had travelled 1230 yards from the downcast shaft to the place where the explosion took place; the height of the seam was from 5½ to 6½ feet, but there was much undulation in the roof, where he thought the gas had lodged; and the pit having been closed from Saturday night until Tuesday morning, the resuming work would cause the waggons and tubs to move against the current of air, and have the effect of driving more air round by the undulations. This increase would carry with it the gas from the undulations to the spot where the men were at work, and cause the explosion. Mr. E. F. Boyd, viewer and agent for the Dean and Chapter of Durham, said his engagements led him to inspect 25 pits; he examined the Hebburn Colliery after the explosion, and believed that it occurred at the undulations in the roof, where there must have been a large accumulation of gas. He bore testimony to the great care that was taken to secure ventilation in this colliery; 45,776 cubic feet of air coursed through the mine per minute, of which 16,882 goes to the north-western district, where the explosion occurred, and which was more than sufficient, as there were very few open workings. Several other viewers were examined, who all spoke to the general efficiency of the ventilation at this colliery, and that a large accumulation of gas might take place in the hollows of the roof without being noticed, and which, by a sudden pressure of air, might be forced down, and thus cause the explosion. The jury returned a verdict of "Accidental Death," accompanied with the following recommendations, viz.: "We, the jury, strongly recommend that the deputy overman be sent down the pit at least an hour before the men go to their work, to examine the mine, and see that the ventilation is in proper order." We (*Sunderland Herald*) are informed that the "Clanny" safety-lamp is used exclusively in this colliery; but that the pit, as shown at the inquest, has always been so well ventilated, that only one of them was in use at the time of the explosion, and that by a man who was at some distance from that part of the mine where the fire-damp exploded. The pitman who was working by the light of the "Clanny" was projected to a considerable distance, and the safety-lamp was only slightly bruised by the shock. It was relighted by the viewer, and by its help the mine was explored, and the bodies recovered.

Colliery Explosion.—An explosion of fire-damp took place at North Elswick Colliery, near Newcastle-upon-Tyne, yesterday week, but fortunately without loss of life. The overman and his assistant were descending in the bucket, for the purpose of mending a brattice, having with them a lighted candle; when about half-way down the gas exploded, and was heard at surface. The engineman instantly reversed the engine, and drew them up, when it was found they were much burnt, but were both able to walk home.

Dudley.—Job Bard was killed, while descending the shaft of the New Lion Colliery, by a quantity of bricks falling on him from the side of the shaft.

Joseph Oakley was dreadfully injured by the sudden explosion of a blast, in a pit at Shuttend, the property of the Galvanised Iron Company.

Wolverhampton.—B. Kearnan was killed by a fall of coal, in a pit in Dixon's Field.

East Wheal Rose.—T. Morcom was killed by chain breaking, and kibble falling on him.

Delabole Slate Quarry.—James Ivey was instantaneously killed here by one of the main chains breaking, and the waggon, loaded with heavy stone, crushing him. Had he stood still he would have been safe, but hearing the crash he ran backwards about 20 ft., and came direct in the way of the falling body.

Explosion at Bishopwearmouth Iron-Works.—Great alarm was created throughout the town of Sunderland on Wednesday evening, about 10 o'clock, by a tremendous noise, resembling the pealing of thunder, which was occasioned by the bursting of a large boiler at the Bishopwearmouth Iron-Works. One of the workmen, we understand, was killed, and another much injured, and a great deal of mischief done by the explosion, which was of a very terrific character. The steam was let off the other boilers, and the noise made greatly increased the alarm till the cause was publicly known. The streets to a late hour were crowded by the inhabitants, anxious to learn the nature and extent of the disaster.—*Durham Advertiser.*

Gwennap.—Elizabeth Rawling, aged 67, having gone from Lanner to Helston on business, and not returning for some weeks, her son became alarmed, and searched the shafts of abandoned mines in the neighbourhood, when in one of them her body was found. The practice of leaving unworked shafts in a totally unguarded state, is an absolute disgrace to the owners of the land, and ought to be visited by heavy penalties. The Rev. Mr. Tucker, foreman of the jury, called their attention to the dangerous state of the shafts formerly worked by the Penstruthal adventurers—some were close to the road and quite open, and it was time some measures were taken to prevent such awful accidents.

THE NEW MARKET IN HUNGARY.

A report that a special envoy from the Government of Hungary, whose seat is now at Debretzin, was on his way to London to propose a commercial treaty between Hungary and Great Britain, had reached us from Paris more than a week ago. Parties, well informed in these matters, have assured us that this envoy is now in town, invested with full powers to conclude commercial arrangements. We regret to add that this information is coupled with the intimation that he is not likely to meet a very cordial reception. We do not dissimulate the regret, which the loss of this opportunity of opening a market, equal in extent to the United States, would occasion us. It is a fearful thing to have so much capital as is embarked in England in mining depending on the whims of Governments not amenable to public opinion, and whose actions cannot be forseen, or made a basis for calculation. When everything on the continent wore the aspect of settling down under arrangements acknowledged by all sovereigns, except the EMPEROR OF RUSSIA, to be demanded by the age, a sudden appeal made to arms, and the forced dismissal of the Diets of Berlin and Vienna, re-opened every sore in the body politic of Central and Eastern Europe, and recommence a course of confusion and bloodshed to which no end is visible.

One country, having freed its territory from foes, with the exception of the small spaces occupied by three camps, has the singular merit of immediately turning its attention to the occupations of peace, looks to England as the party most interested in encouraging this disposition, and offers us first the right hand of friendship, rich with the profits of an enormous trade. What Austria obstinately refused through 10 years of negociation—what Russia has for a quarter of a century withheld—what we broke with Spain to obtain in South America, and lavished the public money and blood of our soldiers to obtain in China—is spontaneously offered by Hungary; we cannot believe that it will be refused.

It is needless to dwell upon the condition of our mining and manufacturing districts. The extremity of poverty is happily not felt amongst them. But the state of the labourer is far from being what it might be; and the trade now carrying on is purchased by the capitalist with a lamentable reduction of profits. Hungary, and the adjacent countries, abounding in corn, and destitute of tools and agricultural implements, as well as of railroads and steam-boats, counting unnumbered flocks, and yet bare of cloth, rich in flax, but in want of linens and cottons, come to us, who require their superfluities, and want their market, imploring us to enrich both ourselves and them.

Why should we not do so? Do alliances of a mere courtly and political nature more stringently bind a Government than its obligations to cherish the prosperity of its own industrious classes? and were this the case, is a treaty of commerce an act of hostility? It surely is rather extraordinary, that if the Hungarians are the enemies of our friends, they should be able to offer us a boon which those friends never dreamt of proposing to us. Should we refuse this most desirable offer, it can be from no other conceivable reason than because the EMPEROR OF AUSTRIA requests us to reject it. But, if we comply with this most modest request, have not the Hungarians a right to say that we go a little out of our way in our affection for Austria; for, to please our friends, we inflict a serious injury on ourselves. The experience of the past shows that if Hungary be united with either Austria or Russia, it will be vain to expect that we shall obtain access to its market. Poland is a case in point, where Russia is concerned. We send few or no manufactured goods into Russian Poland. The denuded state of Hungary tells its own tale respecting the fiscal system of Austria.

We do not desire to see commercial matters mixed up unnecessarily with politics; but we cannot consent to have the trade of this country postponed to considerations arising out of treaties, torn to shreds like the treaty of Vienna. On what corner of that treaty can Austria lay its finger which has not been violated? The occupation of Cracow by Austria itself, in the midst of profound peace, followed by that of Bologna, and an attack upon Ancona; Russia in Moldavia, Wallachia, Galicia, and Moravia; France at Rome; Spain at Gaeta. These are curious illustrations of that respect for treaties which we are invited to show, at the sacrifice of a market of 20,000,000 of rich and willing consumers. We recognised Belgium as an independent state, while Holland held the citadel of Antwerp. It would be difficult to justify a refusal to make a treaty of commerce with Hungary, now that Austria holds no such position within the Hungarian territory.

LONDON INDISPUTABLE LIFE POLICY COMPANY.—The first annual meeting of this society was held at the London Tavern, yesterday, for receiving the report, and for the election of directors.—JOHN DANGERFIELD, Esq., having taken the chair, Mr. D. ALISON (the secretary) read the report, from which it appeared that, after fully providing for the payment of the sums assured and all outstanding debts, including preliminary charges, there was a balance of profit amounting to 11,919*l.* 13s. 11d., which belonged to, and would be divisible with, the future profits. In the course of the 11 months embraced in the accounts, 253 proposals of assurance had been submitted to the board, of which 227 had been completed and issued, assuring the sum of 73,101*l.*, and yielding in annual premiums a revenue of 2904*l.* 15s. 10d. This extraordinary success was attributable to the adoption by the society of the principle of indisputability in mutual assurance.—After some discussion of a friendly nature, the report was adopted, and Messrs. R. H. Forman, J. Hamilton, J. F. Madox, and J. T. Brownwell were elected directors, and Messrs Turner and Cumming auditors, when a vote of thanks was passed to the manager and actuary (Mr. A. Robertson), and the directors and officers, when the meeting terminated.—[A report in full of this meeting will be given in our next Journal.]

WEST CORNWALL RAILWAY.—A public meeting of the inhabitants of Penzance was held by requisition on Friday week, for the purpose of considering a proposition to enable the company to construct the railway.—THE MAYOR took the chair.—It was stated that a number of gentlemen, unconnected with the railway, had ascertained the probable cost of the line, and that, when completed, it would pay 6 per cent. They had made an offer to the company to take up the surplus, or rather forfeited, shares at 6*l.* discount—the nominal amount of the share being 20*l.*—on condition that an arrangement be made with the present debenture holders and mortgagees to continue their securities, and not require payment of the principal for at least three years; the construction of the line from Hayle to Penzance to be proceeded with at once, and for the construction of which a call be made on all the shares (including the 10,000*l.* shares, presumed to be well held by proprietors in the company), not exceeding 4*l.* per share, payable in two instalments; that no interest be paid to the shareholders until after the opening of the line, and then from the net profits only; that dividends shall be paid on the shares held by the Hayle Railway proprietors, *pro rata* only with the other shares, to the extent of 5 per cent. on the sum paid up on the latter; the surplus, if any, to be applied in payment of interest on the remaining paid-up capital of the Hayle shares to the extent of 5 per cent. It was also stated that the landowners were favourably disposed towards the undertaking, and several of them would agree to take paid-up shares in lieu of money for the value of the land. Eleven gentlemen, locally interested, had already intimated their intention to take up 717 shares among them, and it was hoped that 2000 additional shares would be taken by persons connected with the county. It was calculated that 4*l.* per share would complete the line to Hayle, and that 6*l.* more would carry it to Truro. Resolutions were passed, to the effect that the construction of the railway was of the utmost importance to the district through which it was intended to pass; approving of the conditions respecting the shares submitted to the meeting; and that it was desirable persons should show their confidence in the scheme, by agreeing to take shares in the company; and hoping that this movement would be followed up by the other towns in the county. After a vote of thanks to the chairman, the meeting separated.

RAILWAY PASSENGERS' ASSURANCE COMPANY.—The House of Commons having last week approved the Lords' amendments to the bill for incorporating this company, we understand that the Act will become operative in the course of a few days, and the offices of the company will be opened to the public for business. The number of commercial and other travellers throughout the kingdom who are now daily using railways in their journeys, and the great increase of daily travellers by railway, will, it is expected, avail themselves of this new office for the protection from loss occasioned by bodily injury sustained by a railway accident, and also to provide for their families in cases of fatal accident. We understand that the premium of insurance is fixed at an exceedingly small sum for annual or season tickets—that is to say, to insure the amount of 1000*l.* in case of death occurring to any traveller by a first-class carriage 1*l.* per annum, 10s. for six months, and 10s. for three months; and to ensure 500*l.* in case of death occurring to a traveller in a second-class carriage, 14s. per annum, 11s. for six months, and 7s. for three months. The company are now making arrangements with all such railways as may be willing to afford them the necessary facilities and co-operation, to issue insurance tickets for a single journey only, by which the same advantages as those above-mentioned will be obtained by the holder, at a cost, for a first-class passenger, of 3d.; for a second-class passenger, 2d.; and for a third-class passenger, 1d., irrespective of distance; the sums recoverable by the representatives of the respective classes, in the event of death, being 1000*l.*, 500*l.*, and 200*l.*—*Daily News.*

LANCASHIRE AND YORKSHIRE RAILWAY.—The works on the Burnley extension of this line have been again retarded, owing to another falling in of the tunnel at Holmes Chapel.

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

Bank Stock, 7 per Cent., 194½ 3½
3 per Cent. Reduced Ann., 90½ ⅝
3 per Cent. Consols Ann., 92⅝ ⅝
3½ per Cent. Ann., 91½ 2
Long Annuities, 8⅛
India Stock, 10½ per Cent., —
3 per Cent. Consols for Opg. 91½ ⅝
Exchequ. Bills, 1000*l.* 2d. & 1½d. 43 6 pm.

Belgian, 4½ per Cent., 79 80
Dutch, 2½ per Cent., 50⅜
Brazilian, 5 per Cent., 79½
Chilian, 6 per Cent., —
Mexican 5 per Cent., 29⅝
Russian, 5 per Cent., 102
Spanish, 5 per Cent, 16¾ ⅝
Ditto 3 per Cent., 33⅜ 4

MINES.—There has been a slight improvement in the share market since our last—several transactions having been completed which were in course of negotiation. There still continues an inquiry for shares in leading and improving mines, and although sellers might be found at better rates, yet they generally decline conforming to buyers' prices, the decline in the standard for copper ore having a tendency to depress the value of shares. The present disturbed state of the continent may produce an unsatisfactory feeling among the holders of copper, but we do not apprehend that there is occasion for alarm from any excess of stock, therefore we trust the depression will be but brief. Tin has also experienced a fall, arising, no doubt, from the great sale of Banca which will shortly take place in Holland. Buyers are evidently depressing the price, with a view of purchasing in the market at a cheaper rate. It is, however, probable that a re-action will afterwards take place, as the stock of tin is very low. Some further remarks on this subject will be found in our leader columns.

Tincroft is represented to continue improving, and is evidently becoming a permanent dividend-paying mine.

Tamar Consols, we learn, is also increasing considerably her returns, and, consequently, profits—last month's being estimated above 500*l.*, and the next will be full 700*l.*; a dividend may be anticipated shortly.

South Basset, West Caradon, West Buller, Devon Great Consols, Mary Ann, and East Wheal Rose are among the several mines that have been inquired for during the week. Wheal Calstock is represented to have improved very considerably, and buyers have sprung up at a considerable advance.

Business in the following shares have been done during the week:—Carn Brea, Condurrow, Devon Great Consols, East Wheal Rose, Levant, Mendip Hills, North Pool, North Roskear, South Basset, West Caradon, Trelawny, Condurrow, Mary Ann, Tincroft, Tamar Consols, Hawkmoor, Kingsett and Bedford, Camborne Consols, Par Consols, South Molton, Treleigh Consols.

At the Levant two-monthly meeting, a dividend of 12*l.* per 160th share was declared, leaving a balance in hand of upwards of 1180*l.*

At the Wheal Seton meeting, the accounts for March and April showed a balance in favour of the company of 407*l.* 19s. 4d.

At the Grambler and St. Aubyn meeting, the accounts for four months ending April showed balance in favour of adventurers of 310*l.* 15s. 6d.

At the Wheal Bal meeting, the balance sheet for the two months showed a balance of 60*l.* in favour of the mine. The operations and future prospects of the mine were represented to be progressing highly satisfactorily.

At the Penzance Consols meeting the accounts showed a balance against the mine of 180*l.* 7s. A call of 4s. per share was made.

At the Birch Tor and Vitifer meeting, accounts from the commencement to the present time were presented and passed; 160 shares in the hands of the company it was resolved to sell, but not for less than 5*l.* per share.

At the Wheal Vincent meeting, the report presented by the captain, and the explanation afforded by him afterwards, were received with evident feelings of gratification; although the mine is in a position of profitable working, a call of 8s. per share was deemed necessary for discharging present and some past liabilities.

The transactions in foreign mines have been but few; some little business in St. John del Rey, Copiapo, Australian, Bolanos, National Brazilian, and United Mexican appears to have been the extent.

Dispatches were received yesterday by the St. John del Rey, National Brazilian, and Imperial Brazilian Mining Companies.

The St. John del Rey letters are to the 7th April, and give the returns for March at 22,177 oits., realising a profit of 3528*l.* 11s. 8d. for the month. The supply of stone had been well kept up from the middle cachoeira, but it is considered prudent to prepare for any falling off in the returns, by opening new ground in the east cachoeira, as well as sinking the shaft.

The National Brazilian advices are to the 13th April. The gold returns from the 25th March to 13th April, in both mines, amount to mks. 11 6 6 8. There has been no important discovery—a favourable change is daily expected.

The Imperial Brazilian letters are to the 13th April. The gold report from the 23d March to 12th April amounts to 21 lbs. 3 ozs. 10 dwts.; the total returns from the 1st Jan. is 123 lbs. 9 ozs. 9 dwts.

RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length. 1849	1848	Present actual cost.	Price p. share	Div. 1848	Div. 1849	Traffic Returns. 1849	1848
Aberdeen	33	16	1,000,547	17½	—	—	£ 692	£ —
Belfast and Ballymena	37⅜	37½	——	20	5*	548	445	
Birkenhead, Lancashire, & Chesh.	19	15	1,088,804	37	5†	933	785	
Bolton, Blackburn, & West Yorksh.	14	—	786,384	7⅛	—	476	—	
Bristol and Exeter	75¼	75¼	2,660,490	65	—	4408	—	
Caledonian	141	141	4,865,135	26⅛	3	5857	3943	
Chester and Holyhead	84	59½	3,358,217	15	4	1382	764	
Dublin and Drogheda	35½	35½	774,875	29	—	875	806	
Dublin and Kingstown	7¼	7½	395,915	—	—	987	1100	
Dundee, Perth, & Aberdeen June.	47½	47½	544,554	2	6½	1095	901	
East Anglian (Lynn to Ely)	91½	55½	1,167,104	2	—	755	490	
East Lancashire	75½	24	2,628,519	16⅝	5	4885	999	
Eastern Counties and Norfolk	322	295	12,027,069	8½	—	15419	15390	
Eastern Union	50½	50½	1,712,703	13	—	1409	1217	
Edinburgh and Glasgow	57½	52½	2,644,378	42	6	4058	3469	
Edinburgh and Northern	78	34	2,232,115	10½	2	2279	1485	
Glasgow, Paisley, and Ayr	102½	74	2,574,330	56½	3	2935	2249	
Glasgow, Paisley, & Greenock	23	23	848,328	13	2	1052	1113	
Gt. Northern & East Lincolnshire	126	—	4,255,171	9⅞ 10½	5†	2037	—	
Gt. Southern & Western, Ireland	168½	110½	3,172,519	29½	6†	3876	2192	
Great Western	230½	206½	11,608,815	79½	6½	19485	20551	
Kendal and Windermere	10½	10½	174,600	5	—	297	160	
Lancaster and Carlisle	70	70	1,476,102	50½	4½	2515	1733	
Lancashire and Yorkshire	206½	127½	9,218,450	24	5⅜	13096	9363	
Liverpool, Crosby, & Southport	13	—	84,455	—	—	221	—	
London and North Western	435	428	25,077,942	125⅛	7	43107	43107	
London and Blackwall	5½	4	1,299,675	4⅛	1-12	1006	1202	
London, Brighton, & South Coast	170	162½	6,382,281	36½	2½	9048	8197	
London and South-Western	216½	194	7,510,680	35½ ⅛	5½	12155	8780	
Londonderry and Enniskillen	14½	14½	171,026	16	—	150	139	
Manchester, Sheffield, & Lincolnsh.	129½	94½	6,048,679	36	5	3583	3338	
Midland Company	471	423½	14,042,340	68	5⅛	20019	19172	
Midland Great Western (Irish)	50	36½	725,332	24⅛	4†	1080	1068	
Monklands	37	—	500,000	—	6	—	686	
North British	109½	83	3,649,055	13½	4½	2939	2188	
Scottish Central	45½	—	1,364,228	24	7	1359	—	
Shrewsbury and Chester	48	23	969,618	17	5	1381	606	
South Devon	57⅜	29	1,909,232	13	5	1908	1471	
South-Eastern	165½	165½	8,116,914	20½	5½	9285	8368	
Taff Vale	40	40	879,110	—	7½	—	1255	
Ulster	36	36	723,829	45⅝	—	758	749	
West Cornwall	13	—	——	—	—	260	—	
Whitehaven Junction	12	12	150,879	9⅛	3	245	167	
York, Newcastle, & Berwick	269	242½	6,827,849	20½	7	11957	12034	
York and North Midland	285⅜	234	4,983,618	32½	7	—	8181	
FOREIGN RAILWAYS.								
Amiens and Boulogne	76½	68	1,462,562	6⅛ 7	2½	1346	1306	
Dieppe	26	—	——	—	—	—	—	
Dutch Rhenish	57½	57½	——	½ ⅝	—	—	888	
Montereau and Troyes	71½	71½	——	—	—	842	—	
Northern of France	211	211	7,142,890	8½	—	13023	10974	
Orleans to Bourges (Central)	107½	107½	1,229,848	—	4	2310	1775	
Orleans to Tours	72	72	600,000	32	6	2980	2531	
Paris and Orleans	82	82	2,011,720	29	8½	7628	6592	
Paris and Rouen	85	85	2,082,916	19⅜	5	—	3631	
Rouen and Havre	59½	—	2,272,176	8⅝	—	—	1465	
Strasburgh and Basle (monthly)	88	88	——	6	—	—	—	
West Flanders (ditto)	—	—	——	1½	—	—	—	

* Per cent.—† Interest.—Total for last week, £238,127, being an increase of £50,100 over last year.

MINING IN CALIFORNIA.—During the present week, large orders have been transmitted from Valparaiso to an eminent gunpowder manufacturer in London, for supplies of mining powder, to be transhipped as opportunities occur from that port to San Francisco. Considerable shipments of canister powder have hitherto been made to Valparaiso; but the orders received this year for mining powder fully quadruple the amount sent there in the preceding years. We have also been informed, on good authority, that a considerable quantity of gold is in course of transport to this country, and that a few weeks will determine the correctness of the opinions advanced as to the quantity raised, and the representations made of the richness of the streams, or rivers. The *Calypso* is expected to arrive in the course of two or three weeks, and will, we are led to expect, be followed by other shipments.

In addition to 80,000*l.* in gold received from Russia a few days back, and a like sum which is to arrive immediately, a further amount of about 750,000*l.* is, we understand, expected in the course of the next few months.—*Times.*

CONTRACTS FOR COPPER.—On the 19th inst., the Admiralty Commissioners will enter into contract for supplying the Chatham and Portsmouth Dockyards with 200 tons of English tough cake copper.

COALS FOR HONG KONG.—The Admiralty will, on the 26th inst., enter into contract for the supply at Hong Kong of 1500 tons of Welsh coals, for the service of her Majesty's steam-vessels.

PRICES OF MINING SHARES.

BRITISH MINES.

Shares.	Company.	Paid.	Price.
1000	Abergwesdin	8	10
1024	Alfred Consols	8½	7⅛
1000	Antimony&Silver-Lead	5	5⅛
1024	AshburtonUnited Mines	8⅛	12
1024	Balleswidden	9	18
128	Bainoon Consols	42½	50
10000	Banwen Iron Co.	6	6
1000	Barristown	5½	1⅛ 2
1000	Bawden	1	1⅛ ⅛
1000	Bedford	2½	3⅛ ⅛ ⅝
1244	Birch Tor Tin Mine	9	9⅛
8000	Bluenavon	50	12½
5000	Blisland Consols	1	6
100	Botallack	182	25
120	Brewer	5	3
10000	British Iron, New, regis.	12	8
—	Ditto ditto, scrip	10	10
128	Buduick Consols	52½	12½
1000	Callington	20	14
1000	Camborne Consols	6	6 6⅛
20000	Cameron's Steam Coal	7	1 2
256	Caradon Copper Mine	9½	1⅛
256	Caradon Mines	22½	10
256	Caradon United	22	5 8
256	Caradon Wh. Hooper	21	4⅛
1000	Carn Brea	15	100
3000	Carthew Consols	1⅛	0
114	Charlestown	220	—
500	Combslawn	5½	4⅛
128	Comfort	45	60 65
256	Condurrow	20	80 3 5
3560	Cook's Kitchen	14	2⅛ 5
1000	Coombe Valley Quarry	3½	4⅛
1000	Copper Bottom	1⅛	0⅛
212	Craddock Moor	23½	5
128	Creeg Braws	120	30
800	Cubert Mine	12⅛	—
1000	Cwm Erfin	3	2⅛ 2⅛
300	D.Prior & Buckfastleigh	—	—
7100	Derwent	8½	5
845	Devon&Courtenay Con.	7⅛	⅛ ⅛
1024	Devon Great Consols	1 200	5 10
1000	Dhurodu	3	5
186	Dolcoath	30	15
2560	Drake Walls	5½	3 4
10000	Durham County Coal	40	9
3000	Dyfngwm	10	12⅛
512	East Alvenney	5½	6
2500	East Birch Tor	3	2
112	East Caradon	47	47
2048	East Crowndale	6⅛	4
512	East Combe Silver-Lead	6⅛	6⅛
128	East Pool	15	60
9000	East Tamar Consols	⅛	⅛ ⅛
94	East Wheal Crofty	125	65 70
1024	East Wheal Fortune	2	3
128	East Wheal Rose	80	550 600
—	East of Scotland Iron Co.	5	1⅛
123	East Wheal Seton	14	10
1280	Esgair Lli	1⅛	3 3⅛
248	Exmoor Wh. Eliza	6	6
494	Fowey Consols	40	45
1024	Freidd Llwydd Mines	1⅛	3⅛
6400	Gadair	2	2
4000	Gen. Mining Co. for Irel.	1⅛	1⅛
256	Gonamena	44⅛	16
128	Goonvrea	4	2
256	Grambler & St. Aubyn	80	12 15
100	Great Consols	1000	120
512	Gt. Wh. Rough Tor Con.	18⅛	20 22
2000	Growa Slate Company	5	5
256	Gwinear Consols	7	1
6000	Helgnston Down Con.	1⅛	⅛
256	Herodsfoot	27	12⅛
10000	Hibernian	12⅛	1⅛
239	Hobb's Hill	6	1⅛
1000	Holmbush	22	10 15
1536	Holne Park	2	2 4
1024	Kingsett and Bedford	1	5 7
787	Kirkcudbrightshire	8⅛	2⅛
2048	Lamberoue Wh. Maria	7⅛	2
252	Lamarth Consols	—	4
128	Lelant Consols	90	40
160	Levant	—	200
1000	Lewis	16	10⅛
1000	Llwynmalees	8	8 8⅛
3600	Llynvi Iron	50	50
256	Lostwithiel Consols	19	14
6000	Marke Valley	10	⅝ 1
5000	Mendip Hills	3	1⅛
128	Metha	34	—
20000	Mining Co. of Ireland	7	4
1280	Nantyeria	4	⅛
256	New East Crowndale	3⅛	2⅛
100	North Pool	45	600
140	North Roskear	5⅛	140
262	North Wh. Leisure	1⅛	2
256	North Wheal Basset	10	10 12
10000	Northern Coal Co.	23	2
128	Par Consols	55⅞	650
8000	Pennant & Craigwen	2	⅛ 1
1024	Penzance Consols	18s 3d	3
512	Plymouth Wh. Yeoland	6⅛	6
200	Polsaith Consols	5⅛	4⅛
2500	Rhoswiddol & Bacheldon	10	10
10000	Rhymney Iron	50	13
10000	Ditto New	7	6⅛
1000	Rosewall Hill	1	5
256	Rosewarva Mines	—	12
2048	Runnaford Coombe Tin	⅛	12

BRITISH MINES—*continued.*

Shares.	Company.	Paid.	Price.
9000	South Tamar	6	⅛
128	South Caradon	5	400
1100	South Dolcoath	4	5
256	Sth. Friendsh. Wh. Ann	30	28 30
256	South Molton	5	15 17
256	South Tolgus	14	52⅛
256	South Trelawny	28⅛	2 3
2000	South Wales Mining Co.	⅛	1 1⅛
128	South Wheal Basset	20⅛	300 10
124	South Wh. Frances	160	250 60
256	South Wh. Josiah	—	3
1000	South Wh. Maria	2⅛	1⅛
10000	Southern & Western, Irish	2	4
280	Spearne Moor	30	40
256	St. Austell Consols	9	—
94	St. Ives Consols	—	80
128	St. Michael Penkivel	5	10⅛
999	St. Minver Consols	1	6
1000	Stray Park	43	17
9600	Tamar Consols	3	7⅛ 8 ⅛
1024	Tavy Consols	6	1⅛ ⅛
6000	Tincroft	7	11⅛ 12
1000	Tin Vale	2⅛	2⅛
58	Tokenbury	170	10
256	Tregordan	2	3 4
256	Tremaine	1⅛	25
5000	Treleigh Consols	6	2⅛ ⅛ ⅛
2000	Tremauce	3	—
96	Tresavean	10	120
120	Trethellan	5	15 16
120	Trevisky and Barrier	130	85
288	Treveal	1⅛	2⅛
100	United Mines	300	200
256	Wellington Mines	25	37⅛ 40
128	West Buller	10	375 400
256	West Caradon	20	125
512	West Fowey Consols	40	12
256	West Providence	9	15
200	West seton	40	190 200
—	West of Scotland Iron Co.	240	90
120	West Trethellan	5	16
256	West United Hills	—	4⅛
512	West Wheal Frances	1⅛	2
256	West Wh. Friendship	9	8
3725	West Wheal Jewel	12	⅛ 1⅛
256	West Wheal Lotgus	80	11 12⅛
256	West Wheal Treasury	19	4⅛ 5⅛ 8
1024	Whiddon Mines	4⅛	2
5200	Wicslow Copper	5	8
107	Wheal Adams	79	30
1000	Wheal Agar	—	8
256	Wheal Albert	10	1
240	Wheal Anderton	25⅛	29⅛
128	Wheal Ann	—	50⅛
512	Wheal Anna Maria	6⅛	8
1024	Wheal Ash	4⅛	8
120	Wheal Bal	5⅛	15
256	Wheal Benny	14⅛	2
256	Wheal Bicncowe	21	12
256	Wheal Bucketts	20	8
252½	Wheal Calstock	9	18 20
268	Wheal Courtenay	12⅛	—
256	Wheal Fortescue	6⅛	—
388	Wheal Franco	27	12 15
128	Wheal Harriet	45	—
100	Wheal Henry	—	20 5
112	Wheal Margaret	79	225
512	Wheal Mary Ann	5 19⅛	20 21
208	Wheal Mary Consols	60⅛	8
360	Wheal Oak	6	7⅛
—	Wheal Penhale	—	12
210	Wheal Prospect	4	7
120	Wheal Reeth	41	150
128	Wheal Rose	60	3
198	Wheal Seton	214	250
180	Wheal Sisters	35⅛	5
494	Wheal Sophia	4⅛	5
128	Wheal Spearne	10	70
128	Wheal St. Ann	30	35
550	Wheal Trescoll	9	10 15
260	Wheal Trelawny	7⅛	75 80
256	Wh. Tremaine (St. Ervan)	9⅛	2⅛
1024	Wheal Tremayne	9⅛	3 4
92	Wheal Tryphena	140	100
1000	Wheal Vincent	2⅛	7
256	Wheal Vlow (Perranz.)	⅛	⅛
184	Wheal Vyvyan	—	60
250	Wheal Williams	28⅛	8
FOREIGN MINES.			
5000	Alten Mining Company	14⅛	2⅛
15000	Asturian Mining Co.	15	3⅛ ⅛
20000	Australian	3	5⅛
10000	Anglo-Mexican Co.	100	⅛
12374	Ditto Subscription	25	1⅛
6000	Barossa Range	1⅛	1⅛ ⅛
3000	Bolanos	120	⅛
2000	Ditto Scrip	11	2⅛ ⅛
10000	Brazilian Imperial	23	3⅛ ⅛
12000	Cobre Copper Co.	40	24⅛
10000	Copiapo Mining Co.	14	4 4⅛
20000	General Mining Ass'n.	20	14
4000	Guadalcanal	5	8 9
5000	Kinzigthal Mining Ass.	2	1⅛
5051	Mexican Company	5⅛	—
2000	Mexican & South Amer.	8	1 1⅛
5000	National Brazilian	30	3⅛ ⅛
104000	N. Brit. Australasian	1	5s 9d
7000	Royal Santiago	10	5⅛
11000	St. John del Rey	15	10⅛ 11⅛ ⅛
13174	United Mexican	Av. 28	2⅛

*** *We should feel greatly obliged by agents, or others interested, furnishing us with such corrections for our Share List as we may not have received through our usual channels of information—our object being, to present as accurate a list of prices as can be obtained—to procure which, we solicit the aid of correspondents in general.*

LATEST CURRENT PRICES OF METALS.

LONDON, JUNE 15, 1849.

	per ton.
ENGLISH IRON. *a*	
Bar, bolt, & square, London	£6 0 0
Nail rods	6 15 0
Hoops	7 15 0
Sheets (singles)	8 15 0
Bars, at Cardiff & Newport	5 0—5 5
Refined metal, Wales*	3 15 0
Do. anthracite*	3 15 0
Pigs in Wales	3 10—4 5
Do. do. forge	2 17 6—3 5
Do., No. 1, Clyde ... *net cash*	2 3 6—2 4 6
Blewitt's Patent Refined Iron for bars, rails, &c., free on board at Newport*	3 15 0
Do., do., for tin-plates, boiler plates, &c., ditto	4 10 0
Stirling's Patent Toughened Pigs in Glasgow	2 17 6—3 2 6
Toughened Pigs in Wales	3 10—4
Staffordshire bars, at the works	6 10
Pigs, in Staffordshire	3 0—3 10
Rails	5 5 0
Chairs	4 0 0
FOREIGN IRON. *b*	
Swedish	11 10—12
CCND	——
PSI	——
Gourieff	——
Archangel	——
FOREIGN STEEL. *c*	
Swedish keg	14 0 0
Ditto faggot	15 0 0
ENGLISH COPPER. *d*	
Sheets, sheathing, & bolts, *p. lb.*	0 0 9
Tough cake ... *per ton*	79 10 0
Tile	£78 10 0
Old copper *e* ... *per lb.*	7¼*d*
FOREIGN COPPER. *f*	
South American, in bond	——
ENGLISH LEAD. *g*	
Pig ... *per ton*	16 0 0
Sheet	16 15—17
Red lead	17 10 0
White ditto	22 0 0
Patent shot	19 15 0
FOREIGN LEAD. *h*	
Spanish, in bond	15 5—15 10
American ditto	——
ENGLISH TIN. *i*	
Block ... *per cwt.*	3 17 0
Bar	3 18 0
Refined	4 4 0
FOREIGN TIN *k*	
Banca, in bond	3 17—4 0
Straits	3 15—3 16
Peruvian (6 mo 2½ p. ct. dis.)	——
TIN-PLATES. *l*	
IC Coke ... *per box*	1 6-1 7
IC Charcoal	1 10-1 13
IX ditto	1 16 0
SPELTER. *m*	
Plates, warehoused ... *per ton*	15 5-15 7 6
Ditto, to arrive	——
ZINC. *n*	
English sheet ... *per ton*	24 0 0
QUICKSILVER *o* ... *per lb.*	0 3 2

Terms.—*a*, 6 months, or 2½ per cent. dis.; *b*, ditto; *c*, ditto; *d*, 6 months, or 3 per ct. dis; *e*, 6 months, or 2½ per cent. dis.; *f*, ditto; *g*, ditto; *h*, ditto; *i*, ditto; *k*, net cash; *l*, 6 months, or 3 p. ct. dis.; *m*, net cash; *n*, 3 months, or 1½ p. c. dis.; *o*, ditto, 1½ dis.

* Cold-blast, free on board in Wales.

REMARKS.—The only feature in the iron market is that of continued dulness and depression. Welsh bars must still be quoted at 5*l.* at the port; but the business done has been exceedingly limited, buyers holding off, except at lower rates. In Scotch pig iron, some speculative purchases seem, for the present, to support the market, the price during the week having varied not more than 6d. per ton; we quote the price to-day 43s. 6d. for mixed Nos., and 44s. 6d. all No. 1—cash, free on board at Glasgow.—Tin plates are easier, and the market in favour of the buyer.

GLASGOW, JUNE 14.—There has been very little doing this week, and the price has been without change. To-day there is rather a better demand; the price may be quoted—buyers at 43s. 6d., and sellers at 44s., mixed Nos.—cash.

LIVERPOOL, JUNE 15.—We have no change to notice in the metal market this week. There is less disposition to press sales of manufactured iron, and prices are well supported. There is a limited business in Scotch pigs, and the price is rather giving way; 43s. cash may be considered the rate of mixed Nos. free-on-board at Glasgow. The American steamer brought few orders, and prices had considerably declined in the States. Tin-plates are dull of sale, at 30s. to 31s. per box for I. C. charcoal. No alteration in lead or copper.

The last accounts from India having reported a demand for metals, and many of the old stocks having been cleared out (as was stated) for export to our newly-acquired territory, the Punjaub, we have been induced to review a carefully compiled statement of the amount of metals exported from London, Liverpool, and the Clyde, to the three presidencies of India during the year 1848, and the five months ending the 31st May of the present year. From these documents it appears that the total amount of the various metals so exported were as follows:—16,360 tons of iron exported in 1848, against 8476 tons exported in 1849; 307 tons of steel exported in 1848, against 315 tons in 1849; 2670 tons of copper exported in 1848, against 1451 tons in 1849; 502 tons of lead exported in 1848, against 694 tons in 1849; 2831 tons of spelter exported in 1848, against 1130 tons in 1849. It should, however, be borne in mind that, during the first six months of the year, the principal shipments are generally made. To China the exports of iron amounted in 1848 to 1826 tons, against 1285 tons this year; 44 tons of steel in 1848, and none this year; 134 tons of lead in 1848, against 90 tons this year; 20 tons of spelter in 1848, and none this year. The gradual decrease in the export of metals from this country to China, since the expiration of the East India Company's monopoly, is a subject worthy of inquiry, and cannot fail to arrest the attention of those acquainted with the trade, since that deficiency does not appear to have been supplied from other countries; nor does it appear that the opening of the ports of Amoy, Ningpo, and Shanghae, has in any way contributed to increase the consumption of our metals to any extent worthy of notice.—*Daily News.*

JOINT-STOCK BANKS.

Shares.	Companies.	Paid.	Div. p. cent.	Price.
22,500	Australasia	£40	£3	£23⅛
20,000	British North American	50	6	40 39⅛
20,000	Colonial	25	5	6⅛
—	Commercial of London	20	6	20⅛
4,000	Ionian State	25	6	24⅛ 25
60,000	London Joint-Stock	10	6	15⅛
40,000	London and Westminster	20	6	23⅛ 24
10,000	National Provincial of England	35	5	35
20,000	National of Ireland	22½	6	18⅛
20,000	Provincial of Ireland	25	8	35
—	South Australia	22½	—	18
20,000	Union of Australia	25	6	21⅛
8,000	Ditto New	2½	6	2⅛
60,000	Union of London	16	6	10⅛

PORTER'S PATENT CORRUGATED IRON BEAMS, GIRDERS, and FIRE-PROOF FLOORS.—These BEAMS and GIRDERS are about 30 per cent. lighter, and 20 per cent. cheaper, than any others of wrought-iron.—The FIRE-PROOF FLOORS, although not more costly than those of cast-iron, with brick arches and concrete, give greater security from fire, with less than one-tenth of the weight.—MANUFACTORY—IRON BUILDING & ROOFING WORKS, SOUTHWARK. *OFFICE—2, ADELAIDE-PLACE, LONDON-BRIDGE, CITY.* 33

DARLINGTON GAS and WATER WORKS.—To Engine-makers and Builders.—The Directors of the Darlington Gas and Water Works are desirous to receive TENDERS for a 27-inch double powered CONDENSING ENGINE, of 5 feet stroke, with boilers, pumps, air vessels, and other apparatus and appendages complete. Specifications may be obtained, and general drawings seen, at the office, in Darlington, of the said Company; or at the office, in Darlington, of Mr. Mason, resident engineer of the works; or at the office, in Nottingham, of Mr. Hawksley, the engineer of the said Company, on and after Wednesday, the 13th day of June inst. Sealed tenders (endorsed "Tender for Engine") must be delivered, by post or otherwise, at the office of the Company, at or before 6 o'clock on the evening of Monday, the 25th day of June inst. The Directors of the said Company are also desirous to receive Tenders for the erection of an Engine-house, Boiler-house, Chimney, two Filter Beds, Tank, and other works therewith connected, to be constructed at Tees Cottage, near Darlington; and also of a Service Reservoir and other works, to be constructed at Short Bushel-hill, near Darlington aforesaid. Drawings and specifications may be seen at the several places hereinbeforementioned, on and after Monday, the 25th day of June inst.; and sealed tenders (endorsed "Tender for Works") must be delivered by post or otherwise, at the office of the said Company, at or before 6 o'clock on the evening of Monday, the 9th day of July next.

By order, HENRY ROBINSON, Secretary.

The Directors do not pledge themselves to accept the lowest tender.

Darlington, June 7, 1849. 16

New Patents.

E. J. Payne, Chancery-lane, London, for improvements in marine vessels, in apparatus for the preservation of human life, and in moulding, joining, and finishing hollow and solid figures, composed wholly or in part of a certain gum, or combinations of certain gums, also for improvements in dissolving the aforesaid gums, and in apparatus or machinery to be used for the purposes above-mentioned.

J. Samuda, Parliament-street, Westminster, for improvements in obtaining motive-power, and the machinery, or apparatus, employed therein, which machinery, or apparatus, may be used for raising liquids. (Being a communication.)

W. Preddy, Taunton, Somerset, watchmaker, for improvements in watch keys, and other instruments for winding up watches and other time-keepers.

J. W. Denison, New York, for improvements in engines for raising or forcing liquids. (Being a communication.

J. Burch, Craig Works, Macclesfield, engineer, for improvements in printing on cotton, woollen, silk, paper, and other fabrics and materials.

P. W. Barlow, Blackheath, civil engineer, for improvements in parts of the permanent ways of railways.

M. J. Haines, John-street, Commercial-road East, leather-pipe maker, for improvements in the manufacture of packing for steam-engines, cylinders, and other purposes, part of which improvements are applicable to the manufacture of waterproof fabrics and leather.

SPECIFICATIONS ENROLLED DURING THE PAST WEEK.

J. Holmes, Norwich, agricultural machine manufacturer, manure distributor, and self-adjusting horse hay rake.

N. J. Amies, Manchester, braid manufacturer, a hollow braid spindle.

R. Hervey, London-street, City, an oval chimney-top.

J. M'Naughton, Glasgow, mechanic, spindle bearing.—*Mechanics' Magazine.*

MEETINGS OF PUBLIC COMPANIES DURING THE WEEK

MONDAY.....Architects', Civil Engineers', Builders', and General Assurance Company—offices, at One.

TUESDAY.....Gadair Mining Company—offices, at Six.
Albion Plate Glass Company—offices, at Eleven for Twelve.

WEDNESDAY..Rhymney Iron Company—offices, at One.
European Life Assurance Company—offices, at One.
Royal Exchange Assurance Company—offices, at Twelve.
National Reversionary Investment Company—offices, at Two.

THURSDAY....Minerva Life Assurance Company—offices, at Twelve for One.
Caledonian Railway—London T

NOTICES TO CORRESPONDENTS.

*** We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

"A Student" (Durham).—Prussic acid is acrid to the taste, and yields a flavour like that of peach leaves. It has a strong tendency to the gaseous form, and is decomposed by light and heat into carbonic acid, carburetted hydrogen and ammonia. It unites difficultly with alkalies, and so feebly as not to destroy their alkaline properties—yielding them even to the carbonic acid. It acts not on the metals themselves, but has a strong affinity for metallic oxides. It is by uniting with red oxide of iron that this acid forms Prussian blue. Gold it precipitates yellow, lead white, and copper brownish red. It readily forms tripic salts with alkaline and metallic bases, more fixed than those with alkalies only; but these are not so permanent as its combinations with the metallic oxides which are not separable by the other acids, although, from the specific heat it possesses, and its tendency to assume a gaseous form, it cannot alone take these oxides from the other acids. The metallic prussiates may become hyper-oxygenised, and the prussiates of iron may exist in three degrees of oxygenisement, of which green shows the lowest, blue the next, and white the highest. When hyper-oxygenised, the mere contact of a fixed alkali converts it into carbonate of ammonia. The oxygen uniting with the carbon leaves the nitrogen to join the hydrogen, and forms ammonia, while the excess of hydrogen and carbon forms carburetted hydrogen. It may be obtained from animal substances by the mere action of fire, by alkalies aided by a strong heat, by the action of concentrated nitric acid, which forms at the same time carbonic acid, oxalic acid, and a diporeous matter, and, lastly, by putrefaction. It is obtained in a pure state by supersaturating the prussiate of alkali with sulphuric acid, and by subsequent distillation. It may also be obtained by distillation of blood with nitric acid, or by passing ammoniacal gas through heated charcoal.

"An Engineer" (The Grove, Southwark).—The import duty in Prussia on lead in pigs is 7½ grosc on the centner; sheets, 2 thalers; fine manufactured wares, 10 thalers. Copper, in plates, 6 thalers; manufactured, 10 thalers; there are no export duties on either of these metals. In Belgium, the import duties on lead are 53 fr. the 100 kilos.; export on ditto, 21 fr. 20 c. Copper, cake and sheathing, 12 fr. 72 c. import duty; 84 c. export. In *Budge's Miners' Guide* a great deal of practical information on assaying is given. The Prussian thaler is about 3s. 2d. sterling; 25 fr. are equal to 1*l.* sterling.

"G. B." (Bond-street).—We have inquired at the office of the Blackwall Railway for the difference in cost of working by locomotives, compared with the stationary engine and wire rope; and the reply we received was—"that it had not yet been ascertained."

"F. A." (Deptford).—A good solution to prevent the dry-rot in wood is formed in the proportion of five pounds of chloride of zinc to twenty-five gallons of water.

"A Reader" (Twickenham).—Eighteen parts of mineral pitch and eighteen parts of resin, put in an iron pot and placed over a fire, to be kept boiling a short time, then add sixty parts of coarse sand, mix it well up together, and lay it on the path an inch thick, sift a little fine gravel over it, and beat it in before the asphalte sets. This is a durable asphalte for garden grounds. Another may be made with one part mineral pitch, one part resin, seven parts chalk, and two parts coarse sand; boil them together and lay on in a hot state, adding a little sifted gravel.

"T. F." (Liverpool).—The blue fire used in pyrotechnics is composed of 1 part lampblack, 1 sulphuret of antimony, 2 sulphur, and 2 nitre. Purple fire—1 part lampblack, 2 realgar, 7 sulphur, 24 nitre, 24 nitrate of strontian. These must be well pounded in a mortar, and mixed together.

"A Dweller in Brittany."—A good yeast may be made thus:—Six ounces of hops are to be put into eight gallons of water, and boiled until reduced to two-thirds, or nearly one-half: let the decoction remain for a quarter of an hour or twenty minutes, until the scalding heat is gone; then mix half-a-peck of ground or bruised malt, cover it, to keep in the warmth, and let it remain till about the heat of new milk, when it must again be strained, to take out the grains; add about three quarts of patent yeast and a handful of flour; let it remain covered to ferment. The next day it will be fit for use. If a small quantity only is required, lesser proportions must be used.

"B." (Strand).—The duty on pig iron in France is 9 francs the 100 kilogrammes; that on steel is 120 francs the 100 kilogrammes.

"A. B." (South Wales).—Mr. Tremenhere's reports on the mines in Germany, and on the Darley Main explosion, and Mr. Warington Smythe's report on Darley Main, are published by Messrs. Hansard, Middle-row, Holborn. Their cost is about 3d. each. They will not forward them to the country. Your bookseller can obtain them through his London correspondent.

"J. L." (Cardiff).—The population of central America is about 1,500,000. Gold, silver, and iron mines are worked; lead and mercury have been found. The most important gold and silver mines are those of Costa Rica, at Del Aquacate, and in Honduras, in Mount Merendon, between Chiquimula and the northern shores, and at Del Corpus and Tabanco. The iron mines are situated near Santa Anna, in Salvador: 75,000 tons were said to have been produced annually, but these mines are nearly altogether neglected. This has been a consequence of the many revolutions which have disturbed the peace of the country. In Honduras, jasper and marble are worked. Brimstone is collected near the volcano of Quezaltenango. There are many salt springs, and salt is collected on the banks of some lagoons, as well as on the shore of the Pacific, in such quantities as to constitute an article of commerce. Further particulars will be found in a paper in another column.

"A Smelter" (London).—We should imagine that, with the qualifications which our correspondent describes himself possessed of, there can be no difficulty in getting his talent and experience appreciated, and brought into requisition. If he has not sufficient connections among mining and smelting capitalists, the only advice we can give is to advertise, describing his qualifications and knowledge in as brief and pithy a style as possible. Patience, and a little perseverance, will do wonders.

"W. P." (Wych-street).—A good brass lacquer may be thus prepared:—To 1 pint of rectified spirits of wine add 1 ounce of turmeric powder, 2 drachms of the best annatto, and 2 of saffron; let it stand 10 days in some warm place, shaking the bottle often during that time; filter it through coarse muslin into a clean bottle, then add 3 ounces of seed-lac, and shake the mixture frequently for 10 days, after which it must be allowed to settle, when it will be fit for use. The articles to be lacquered must be perfectly clean, and free from all grease; they must be heated, either in a stove adapted to the purpose, or on a piece of nearly red-hot iron, until they are just above the temperature at which they can be held in the fingers. The lacquer is applied either by means of a camel's-hair brush, or by dipping in the articles. The green bronze is thus prepared: 1 quart of strong vinegar, ½ ounce of mineral green, ½ ounce of raw umber, ½ ounce of sal-ammoniac, ½ ounce of French berries, ½ ounce of copperas, and about 3 ounces of green oats; if the last cannot be procured, they are not of material consequence. Dissolve the different salts and gums in small portions of the vinegar, then mix the whole in a strong earthern vessel, adding the berries and oats, and over a gentle fire bring the compound to boil; then allow it to cool, and filter it through a flannel bag, when it will be fit for use. The following is a bronze commonly used by brassfounders:—1 pint of strong vinegar, 1 ounce of sal-ammoniac, ½ ounce of alum, and ½ ounce of arsenic; dissolve them in the vinegar, and the compound is fit for use. Sometimes the vinegar and sal-ammoniac is only used, but in this case the metal must be of good quality. To be successful, the work must be well cleaned, and especially free from grease. The bronzing must be performed with a small soft brush, and great care must be taken to keep the work constantly wet with the liquid, in order to prevent its turning green. When the colour which is wished has been attained, which will generally be in from 20 to 30 minutes, the work must be quickly washed in clean cold water, then dried in soft warm sawdust, after which the whole is covered with a coating of lacquer, which preserves the colours. When by the above process a sufficiently dark colour cannot be obtained, the following will be found a cheap and effectual method of obtaining the required tinge:—Mix about a ½ ounce of the finest lampblack with 1 gill of strong spirits of wine, and strain the mixture through a fine linen cloth. The work on which the bronze has been already used must then be warmed upon a cistern plate, or over a clear fire, until it can scarcely be held in the hand. The mixture must then be laid on in very thin coatings, until the required shade is obtained. When cold, it must be polished with a very soft brush, or piece of linen rag, dipped or moistened with clean green oil. A coating of lacquer is then laid over the whole. If the work be not made too black with the mixture, and the lacquer used of too bright a yellow, the bronze obtained will be a beautiful dark green. The work, however, will stand much longer in colour when the bronze can be made sufficiently dark without using the blacking at all, and this may be effected by the following method:—When either of the bronzes has been used, and the work dried, if the shade should not appear so dark as is wished, let the work be placed over a smart fire, or in bright sunshine, where, however, no current of air passes; when thus exposed, let it be turned occasionally, and brushed with a soft brush. This will be found to produce a fine bronze, but it is tedious, and, where time is an object, it will always be the best to use the blacking.

"A Reader" (Guildford).—The Sicilian cantar is about 105 lbs. English: 100 French kilogrammes are equal to 210 lbs. English.

"Plumbus" (Cromford).—There are large deposits of lead at Taberga, in the Asturias, and there are small mines which have been partially worked at Caranga, which is about two leagues from that place. Coal and limestone are found in great abundance in the vicinity, but owing to the unsettled state of the country, they have not received the attention which they merit. The richest district for lead in Spain is Linhares, in the province of Jaen, in Andalusia.

John Herries (Glasgow).—Chromate of iron is found in large quantities in the United States; there are some deposits in Norway, but these lay at some distance from the sea, and it is questionable whether if worked they would pay the heavy carriage.

"F. C." (Cambridge).—The diamond is a combustible mineral. For some interesting particulars, see another column.

"G. B." (Islington).—Calcedony presents various shades of white, grey, yellow, brown, green, and blue, the colour for the most part being uniform; it occurs massive, botryoidal, and stalactitic, sometimes crystallised in cubes. It is commonly semi-transparent, is harder than flint, and is infusible. Splendid stalactitic specimens of this mineral were at one time found in the Trevascus Mine in Cornwall; Iceland and the Faroe Islands are now, however, its best known localities. It also occurs in Ceylon, in several parts of India, in Siberia, Carinthia, Hungary, and many of the Hebrides. The following are generally considered varieties of calcedony—onyx, which is the species used in the manufacture of cameos, plasma, heliotrope or bloodstone, chrysoprase, cacholong, carnelian, and agate.

"D. B. (Bath.)—The fuel used for domestic purposes in Estramadura and Castile is straw. Though there is abundance of coal in the very neighbouring province of Asturias, the roads are so bad, that it could not be transported from there unless at such a cost as would preclude the sale.

W. Beverley (Leeds).—It is calculated that the contract of lighting the city of Christiania will be completed in the month of July. Mr. Malam, the contractor, has just concluded an agreement with Baron Wedel-Jarlsberg to light the Boerum Iron-works with gas.

"L. S." (Lime-street).—Bismuth is white, darkened by a shade of red, or yellowish red; it yields a little under the hammer, but is so brittle that it may be thus reduced to powder; its specific gravity is 9·822. Next to tin and tellurium, it is the most fusible of all metallic bodies. It tarnishes, but does not rust in the air; when exposed to a strong heat it burns with a blue flame, and sublimes with a yellowish smoke, which forms when condensed the oxide of bismuth; muriatic acid does not act upon it but by the aid of heat and concentration; in oxygenised muriatic acid gas it immediately inflames and throws out very brilliant sparks. A mixture of 1 part with 3 of oxygenised muriate of potash burns rapidly in contact with an ignited body, and detonates loudly if struck with a hammer. It renders gold brittle, and communicates to it its own colour; but it does not render silver so brittle as it does gold. It diminishes the red colour of copper; with lead it forms an alloy of a dark grey colour; to tin it gives a greater degree of brilliancy and hardness; with iron it does not unite, but by a violent heat; with mercury it amalgamates and forms a fluid alloy; it is used for pewter, soft solder, printers' types, &c.

*** The numerous disappointments in procuring back Numbers during the past year induces us to suggest, that subscribers should be careful in filing, or otherwise preserving, their papers; and where extra copies are required, that they should be applied for as early as possible.

ELECTRIC TELEGRAPH.—"S. E." is in error. The system of Messrs. Brett and Little is successfully employed on several lines of railway. We believe much delay has been occasioned by actions commenced against those patentees by the Telegraph Company—the result of which, of course, it is impossible to foretell; but we believe they have little reason to anticipate permanent impediment from adverse legal decision.

"Germanicus" (Paddington).—We have not received the results of the experiments of any of our correspondents in gold-making. Our friend, the Liverpool ironfounder, we understand, has failed in his proposed "transmutation," and has candidly confessed his inability *to make gold out of iron*. If "Germanicus" intends abandoning copper to obtain gold, we recommend him to apply either to "G. D." (Mr. Simpson's, High-street, Shadwell), who is in possession of the secret of an El Dorado, where "sufficient gold can be picked up to ballast a ship in an hour" (*vide* advertisement), or to General O'Brien, who can inform him "where there is gold enough to load *one hundred men-of-war*—(*vide Mining Journal*, June 2). What with the report of these inexhaustible stores, and the recent statements from California, gold is likely to become so common, that "Germanicus" may do better by turning his attention to the collection of the common metal—*tin*.

"E. L. L." (Ougrée, Liege).—We have been anxiously awaiting the promised Muessler lamp, being desirous of accompanying some remarks on the invention by an illustration

*** It is particularly requested that all communications may be addressed—

TO THE EDITOR,
Mining Journal Office,
26, FLEET-STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL
Railway and Commercial Gazette.

LONDON, JUNE 16, 1849.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

We have just received the annual returns, printed by order of the House of Commons, of the Imports and Exports of Copper and Copper Ore, Lead and Lead Ore, Tin and Zinc, into and from the United Kingdom, for the year ending 5th January, 1849.

From these returns, we learn that the quantity of COPPER ORE imported in the year has been 50,054 tons, being an increase over the year 1847, of 8564 tons—the latter having been 41,490 tons. Of this quantity of 50,054 tons, 35,753 tons entered the port of Swansea, 9357 tons in London, 4614 in Liverpool, and the remainder at Portsmouth and Plymouth. The following are the countries from which it was imported:—

Countries.	Tons.	Countries.	Tons.
Cuba	30679	China	398
South Australia	7783	Italy	126
Chili	4504	Spain	120
New South Wales	3689	Western Coast of Africa	101
Peru	1883	Sundries	237
Van Diemen's Land	544		
Total	*Tons* 50,054		

The total entries within the year retained for home consumption are 51,307 tons, being 8406 tons previous to the repeal of the duties, and 42,901 since; and the net amount of the duty received was 10,227*l.* 2s. 3d., being 8077*l.* 14s. 1d. under 8 and 9 Vic., cap 90; and 2149*l.* 8s. 2d. under 11 and 12 Vic., cap. 127.

The total quantity of BRITISH COPPER exported has been 13,466 tons, being a decrease of 1676 tons, as compared with 1847. The following are the countries to which exported, and the different descriptions of metal:—

Countries.	Unwrought bricks & pigs.	Sheets, nails, & yellow metal.	Wrought cop., other sorts.	Total
British Territories, East Indies	1616	1947	20	3583
United States	72	2546	1	2619
France	1602	54	26	1682
Italy	53	666	6	725
Holland	280	398	6	684
Hanseatic Towns	40	622	12	674
Belgium	524	99	27	650
Brazil	—	633	2	635
Foreign West Indies	8	254	2	264
Portugal, Azores, Madeira	27	201	10	238
British Settlements in Australia	—	230	7	237
Spain and the Canaries	5	155	2	162
British West Indies	—	62	69	131
Western Coast of Africa	—	123	8	131
Channel Islands	—	121	6	127
Egypt	—	119	4	123
Java	—	104	1	105
British North American Colonies	10	80	10	100
Sundry other places	25	533	38	596
Total	*Tons* 4262	8947	257	13,466

The total quantity of British copper exported from the port of London was 6502 tons, of which was sent to the British West Indies 2480 tons; Holland, 649 tons; Belgium, 643 tons; Italy, 544 tons; Hanseatic Towns, 472 tons; Brazil, 339 tons; British settlements in Australia, 228 tons; France, 181 tons; United States, 153 tons; Spain and Canaries, 138 tons; Portugal, Azores, and Madeira, 116 tons, &c. There was also exported foreign wrought copper to the value of 5989*l.* The total exports of British copper from the port of Liverpool were 4892 tons; and foreign, 22 tons.

The imports of LEAD into the United Kingdom have been—viz.:

Countries.	Pig and Sheet.	Lead Ore.
Spain	3448	51
France	156	397
Gibraltar	59	201
Belgium	99	211
Holland	1	140
New South Wales	—	125
South Australia	—	90
Portugal	—	83
Channel Islands	—	10
United States	22	—
Sundry places	3	—
Total	*Tons* 3788	1298

The quantity retained for home consumption was 2158 tons, and the amount of duty received 275*l.* 8s. 5d.

The exports of BRITISH LEAD have been as follows:—

Countries.	Pig and Sheet.	Shot.	Litharge.	Red Lead.	White Lead.
Russia	1793	18	33	11	6
British East Indies	636	117	—	205	74
British Australia	354	138	1	8	98
Holland	231	—	141	212	7
Hanseatic Towns	188	70	45	108	61
Brazil	181	148	5	20	82
British North America	160	299	1	34	101
British West Indies	153	46	—	1	53
Cape of Good Hope	139	36	—	15	37
Channel Islands	124	23	—	—	19
Norway	116	16	5	4	67
Portugal, Azores, Madeira	113	2	13	37	200
Sundry places	792	198	165	187	363
Total	*Tons* 4977	1151	282	842	1168

In 1847 the quantity of British pig and sheet lead was 8259 tons, showing a falling off for the year 1848, as compared with 1847, of 3282 tons. In shot, litharge, red and white lead, there was no material difference.

The quantity of TIN imported into this country in the year has been 299 tons, of which 234 tons were retained for home consumption, and the duty paid was 1437*l.* 15s. 2d. This shows a decrease in the quantity imported, as compared with 1847, of 866 tons, the latter having been 1165 tons. The following are the places from which it was received:—

Countries.	Tin.	Countries.	Tin.
Singapore	136	China	15
Holland	74	British Territories, East Indies	7
Belgium	27	Cape of Good Hope	1
Spain	21		
Peru	18	Total	*Tons* 299

And 34 tons of REGULUS from France.

The exports of British and Foreign tin, during the year, have been 1797 tons of the former, and 417 tons of the latter, being an increase of 56 tons British, and a decrease of 157 tons Foreign, as compared with 1847. It was exported as follows:—

Countries.	British.	Foreign.	Total.
Russia	586	88	674
United States	385	146	531
Turkey	191	—	191
France	161	—	161
Spain and Canaries	74	—	74
Italy	60	66	126
Holland	47	17	64
Hanseatic Towns	42	37	79
Brazil	39	—	39
Syria and Palestine	30	—	30
Portugal, Azores, and Madeira	30	—	30
Sweden	29	2	31
Greece	20	—	20
Ionian Islands	14	—	14
Wallachia and Moldavia	14	—	14
Gibraltar	13	—	13
Belgium	7	43	50
Sundry places	55	8	63
Total	*Tons* 1797	417	2214

The total quantity of ZINC imported has been as follows:—

Countries.	Tons.	Countries.	Tons.
Hanseatic Towns	6043	Holland	538
Belgium	3098	Denmark	53
Prussia	2505	Hanover	5
France	1283		
Total		*Tons*	13,525

This is an increase over the quantity imported in 1847 of 755 tons, while in the exports there is a decrease in British of 324 tons, and an increase in foreign of 431 tons.

The exportations were as follows:—

Countries.	British.	Foreign.	Total.
British Territories, East Indies	193	3154	3347
United States	119	242	361
Italy	26	111	137
France	—	118	118
Java and Indian Islands	—	62	62
Cape of Good Hope	46	—	46
British North American Colonies	14	30	44
Australia	34	2	36
Belgium	27	1	28
Holland	23	—	23
Egypt	1	20	21
Russia	16	2	18
Brazil	11	7	18
British West Indies	10	—	10
Gibraltar	1	10	11
Sundry places	41	18	59
Total	*Tons* 562	3777	4339

We have also received the returns of the quantities of coals, cinders, and culm shipped at the several ports of England, Scotland, and Ireland, coastways to other ports of the United Kingdom; to foreign countries and British settlements abroad; those forwarded by inland navigation, with the rate and amount of duty thereon; and distinguishing the quantity shipped at each port as compared with 1847. From these we find the total quantities shipped to other ports in the United Kingdom, in 1848, to have been 9,074,079 tons, being an increase over 1847 of 199,480 tons. The principal of these shipments were from the following ports:—

Ports.	Coals.	Cinders.	Culm.	Total.
Newcastle	2,243,177	30497	—	2,273,674
Sunderland	1,910,148	1664	—	1,911,812
Hartlepool	930,745	1823	—	922,568
Stockton	548,491	8549	—	556,950
Cardiff	544,196	2765	—	546,961
Newport	429,217	—	—	429,217
Swansea	224,277	48	168046	392,371
Whitehaven	291,255	—	4310	295,565
Llanelly	192,222	—	47864	239,886
Irvine	221,803	—	—	221,803
Shields	213,455	1254	—	214,709
Maryport	172,420	7256	3563	183,239
Goole	143,688	291	—	143,970
Gloucester	117,650	—	458	118,108
Chester	100,340	—	—	100,340
Sundry other ports	481,606	2964	38797	522,906
Total	*Tons* 8,754,130	57,111	262,838	9,074,079

The total quantity of coal, cinders, and culm exported to foreign countries and the British settlements, have been 2,785,300 tons, being of the total value of 1,088,221*l.*, showing an increase over 1847 of 302,149 tons, and 119,719*l.* Of this quantity, there were exported from England 2,511,429 tons, of the value of 986,184*l.*; Scotland, 257,154 tons, value 97,667*l.*; and Ireland, 6717 tons, value 4370*l.* The following are the principal places to which these exports were forwarded:—

Countries.	Tons.	Value.
France	565,956	£ 197,458
Hanseatic Towns	286,690	91,038
Russia	197,801	71,525
Italy	151,466	66,425
Denmark	198,427	61,160
Prussia	168,258	54,432
British West Indies	92,446	53,553
Spain and the Canaries	109,885	52,735
Holland	145,349	49,019
British North American Colonies	89,783	34,467
Malta	77,026	33,807
United States of America	57,604	32,086
British Territories, East Indies	51,778	30,463
Channel Islands	62,294	27,117
Foreign West Indies	53,137	25,424
Turkey	57,026	25,176
Brazil	51,577	23,130
Egypt	38,837	15,931
Portugal, Azores, Madeira	39,710	15,554
Sweden	48,800	13,044
Norway	47,369	14,947
Chili	24,094	12,134
Aden	19,047	10,993
Cape of Good Hope	17,497	10,196
Sundry other places	142,737	64,185
Total	*Tons* 2,785,300	£1,088,221

Of this total quantity there has been exported—Coal, 2,699,468 tons; cinders, 82,908 tons; culm, 2924 tons—making the total 2,785,300 tons, on which the amount of duty levied on coal exported in foreign bottoms, not entitled to the privileges conferred by treaties of reciprocity, at 4s. per ton, has been 4393*l.* 2s. 10d. The coal brought into the port of London in 1848, were—coastways, 3,418,340 tons; inland navigation and land carriage, 60,849 tons—making a total of 3,479,189 tons—showing increase over 1847, of 156,802 tons.

It would appear that the Government are determined to put off, to the latest possible period, any measures for the adoption of a system of colliery inspection. They appear as much alarmed, and as loth to go to work, as if it was a bill for the reduction of taxation, or one to reduce some of their own undeserved salaries. Their being constantly reminded from all sides has not the slightest good effect, and they appear very much like Paddy's pig, which, the harder it was attempted to drive him into Dublin, the more the *baste* would turn his head towards Cork. In vain are they assailed with information after information of fatal explosions, and the immolation of hundreds of victims to this JUGGERNAUT of apathy and neglect; in vain does Mr. WYLD goad them with petitions from thousands of the people, or Mr. HUME threaten to bring the subject himself before the House; they only get a repetition of the parrot's tale, which Sir GEORGE GREY has actually got by heart—"It is impossible for Government to take such subject at present into consideration, but no time shall be lost," &c. We shall now have an opportunity of seeing what the other House will do in the matter, their lordships never having been very remarkable for their activity, particularly when the measures under consideration have any tinge of liberality of character, or are likely to breathe on those palladiums of power—ancient customs, and vested rights. The Earl of ST. GERMANS, on Monday evening last, presented a petition from Mr. GOLDSWORTHY GUR-

NEY, praying for the adoption of more effectual measures for the ventilation, and for the prevention of explosion in coal mines. His lordship said, facts showed that this was a petition entitled to the most serious consideration; they all knew well how essential it was to the wealth and to the comfort of the inhabitants of this country that coal should be raised with the least possible waste and cost. In the year 1847 there were 623 persons killed, and 196 seriously wounded by explosions in coal mines; and in 1848 446 killed, and 158 disabled for life. In 1835 a committee had been appointed by the House of Commons to examine and investigate the subject, to devise and consider the means best calculated to secure the lives of persons working in coal mines. No practical measure, however, followed the sittings of that committee, and matters remained in the same state until a fearful explosion took place in the neighbourhood of South Shields; then a meeting was held in that town, and a local committee appointed, consisting of scientific and practical men of the neighbourhood. It sat at different times for a period of three years, and produced a report, which he then held, and a more valuable document, in his opinion, never was published. This report showed that the best safety-lamps were insufficient for the purposes for which they were intended, and in certain conditions of the atmosphere increased rather than diminished the danger. They then proceeded to point out for adoption the plan for ventilation, which Mr. GOLDSWORTHY GURNEY had described minutely in his evidence before the Committee of the House of Commons in 1835. His lordship then referred to the adaptation of the machinery to the Seaton Delaval Colliery, where the increase of ventilative power had risen from 50 to 100 per cent. over what it had been previous to the plan being adopted; to the colliery of Mr. DARLINGTON, in which a fire had been extinguished by Mr. GURNEY's plan: and said it had been represented that Mr. GURNEY was a visionary enthusiast; he had known that gentleman for years—he believed he was an enthusiast, but he denied that he was a visionary one—a more practical man he never had the honour of meeting. He called upon their lordships to give their favourable consideration to this petition, and expressed a hope that Government would take Mr. GURNEY's plan in hand, for it was disgraceful that these accidents should occur so frequently when there were adequate means to prevent them. Lord BROUGHAM strenuously supported the prayer of the petition; he thought it would be better to have a committee of their lordships appointed, to examine into the whole of the subject. If this system of ventilation were a cure for explosion of fire-damp, he should not like to be the proprietor of a coal mine criminally proceeded against for the results of such an explosion, now that the cure was known. The Marquis of LANSDOWNE spoke in favour of the petition, believing that experiments of a successful nature had been made by Mr. GURNEY; and Lord WHARNCLIFFE said it was worth while to consider whether the time had not arrived, and whether there was not sufficient ground for their appointing inspectors of coal mines. He confessed he had at one time had his doubts of the efficacy of such appointments, but there had of late been some useful inquiries made, and some most valuable information obtained, which had induced him to change his mind. He found that in Belgium there had, for years past, been Government inspectors, established upon the best possible system, they being able and competent officers, whose duty it was not to interpose their authority for the purpose of controlling and directing those who were responsible for the management of the mines, but to assist them, with their advice as to the best possible means of preventing catastrophes. In Belgium, under this system, although there had been an increase of 20 per cent. in the amount of coal produced, and 17 per cent. in the number of persons employed, there had been a decrease of 20 per cent. in the number of fatal accidents.

Upon the whole, the matter appears to look a little more cheering, and we trust the coal miner will shortly be placed in a position of comparative safety to what he is at present, by the appointment of inspectors—a means of safety to which, from their imminently dangerous employment, they are so justly entitled. There is another point of detail in colliery operations, which would form as important a subject for the duties of inspectors as ventilation—that of continuously securing the safety of the ropes and chains by which the men are lowered into the pits; and as Mr. FOURDRINIER's patented apparatus has now been proved beyond a doubt to be a perfect safeguard to life and limb, should a rope or chain break, there can be no excuse on the part of the coal proprietors for loss of life, or injury, from such accident. We call attention to some correspondence on the subject in another column, showing its undoubted practical utility, and the determination of the patentee to render them at a price which shall come within the reach of every colliery owner.

A few weeks since, we endeavoured to direct public attention to the high importance of obtaining for the mercantile, and other interests of this kingdom, a more prompt and direct access to the Pacific Ocean, than the present dilatory and tedious route around the southern extremity of the American continent. Not that we by any means wished to treat it as exclusively a question for Great Britain. It is, rather, a European question, and concerns the trading interests of nearly all the civilised world, for all the merchandise of Christendom which would reach the Western sea-board of the three Americas must, at present, go some thousands of miles southward out of their true course; and so also must the produce of the insular groupes, stretching throughout Oceana, when forwarded to the markets of Europe. And as great an hindrance as the present route is to the transit of merchandise out or home, so great an impediment is it to that free intercourse which, for all purposes of consultation and government it is expedient to have with our newly enfranchised colonies lying in, or immediately approximate to, the regions of which we speak. Our vigilant competitor, the Government of the United States, is not insensible to the value of the interests involved in this question, and has sent an agent to negotiate the concession of a right of way across the Isthmus of Darien. When we adverted to this subject on a former occasion, we ventured to point out what may be called the Vicarenga route as the most practicable and most direct of the three several methods of intersecting the isthmus which had been suggested. And it happens, curiously enough, that the agent in question was instructed to treat for this particular route. If the American Government open up a highway between the two oceans, which shall be accessible and free to the whole world, we shall hail them as public benefactors; but if they make it an American treaty for American purposes, then it is time for us, as a people, to look about and see if we cannot do for the character and interests of England that which, in this particular instance, it is our duty to see accomplished.

The late dreadful explosion at Hebburn Colliery, by which thirty-three men and boys were suddenly deprived of life, which we recorded in our last Number, and the result of the coroner's inquest on which will be found in another column, has caused a most powerful, though distressing, sensation in the district; and the circumstances under which the explosion occurred tend to confirm the opinion which is fast gaining ground, that some regulations must be adopted under legislative enactment for securing, as far as human agency is capable, better ventilation, and the greater safety of the lives of the working miners. Such has been the purity of the air in this mine, that on the morning of the explosion only one safety-lamp was used in the mine. This was a "CLANNY" lamp, and found perfectly entire, glass and all, although driven to a considerable distance by the explosion, which testifies for the strength and value of the CLANNY lamp. One man was constantly employed boring or tapping the coal previous to being taken down, by which means the gas escaped and was carried off with the air currents up the upcast shaft, and every proper precaution appears to have been taken by the owners and viewers of the colliery; yet, notwithstanding this care, in an instant the fatal blow is struck, which annihilates 33 human lives, and leaves their surviving relatives, in a majority of instances, to the pangs of abject penury and want.

Mr. EASTON, part owner and viewer of the colliery, gave it as his confirmed opinion, that the height of the seam, in some places, causing undulations in the roof, was the cause of the explosion, the gas having accumulated there. Had it been known that such was the case, it could easily have been removed, and the explosion prevented; yet it was not known, nor were the hollows in the roof tried with the lamp. Now, are we not justified in presuming that an experienced inspector would immediately have had his attention called to these undulations—the very place where the light gas was likely to accumulate, more particularly under the peculiar electric condition of the atmosphere two days previous to the accident. Under a well-arranged system of scientific inspection, the viewers, and the men themselves, would give more notice to many apparently trifling phenomena which may be remarked in mining operations, and which would tend to put them on their guard against the approaching inroads of the lurking enemy. Since Mr. DUNCOMBE brought in a bill, in 1847, for regulating the working of collieries, we have had three or four severe and awfully fatal explosions; and, although the feeling of the House was in its favour, that gentleman was induced to withdraw it, on Sir GEORGE GREY pledging himself, on the part of Ministers, that a similar measure should be introduced by them in the next session of Parliament. That pledge has been broken, and while the country is aroused to the dire necessity of some protective measures, the Government alone are careless of the consequences.

The late explosion at Barnsley, and the more recent one at Hebburn, will, we trust, still further agitate the question, and show Ministers that the lives of hundreds of our fellow-creatures shall no longer be trifled with, but that the time is come when further procrastination will not be tolerated, and a proper measure must be introduced, which shall, to the extent that human means are available, render improbable such sweeping sacrifices of human life which we have within the past few years been obliged to witness. Promises on this subject have been so often recklessly broken, that it is idle to put faith in what Sir GEORGE GREY says in his place in the House of Commons; but, in reply to Mr. WYLD, on Tuesday last, he stated that the Government had it in contemplation to adopt some stringent measure of inspection, although, on the previous Friday, he stated, they could not attend to such measures at present. Truly, they want a little of the friendly assistance of a pressure from without.

The following remarks, which appeared in the *Morning Chronicle* of Thursday, are so apposite to the subject, and so clearly expose the want of energy, and the scientific ignorance, of those who are entrusted with the making of our laws, and their administration, that we transfer them entire to our columns:—

There is a well-known anecdote, told by the late GEORGE STEPHENSON, illustrative of the unscientific character of our legislators. When he was about to be examined before the first Parliamentary Committee that ever sat on any railway (the Liverpool and Manchester), the directors of the company, in fear and trembling, begged that while giving his evidence he would not indulge in any of his flighty notions about carriages going by steam at the rate of from 15 to 20 miles an hour—adding that, if he did so, he would be treated as a dangerous visionary, and the Bill would most assuredly be thrown out. In order to be on the safe side, therefore, the directors exacted a promise from him that he would confine himself, at the utmost, to 12 miles per hour. However, during his examination, STEPHENSON himself took fright at the "slow" prejudices of his examiners; and, quaking for the fate of his project, he told the committee, when they inquired how many miles per hour he expected to accomplish, that "*he thought he might be able to manage ten.*" The imagination of our legislators seem to be almost as "slow" now as they were then. Parliament appears—in matters of science, at least—to be as far behind the age as ever it was. In 1835—as many as 14 years ago—a committee of the House of Commons was appointed to inquire into the subject of accidents in coal mines, with a view to ascertaining the best means of securing the lives of colliers. Mr. GURNEY gave evidence before that committee, and explained to them a plan by which he proposed to ensure the perfect ventilation of mines. "The committee," said the Earl of ST. GERMANS, in his speech on the subject last Monday night, "recommended the attentive consideration of those proposals;" but no consideration was given to them. Four years afterwards (1839) a terrible explosion took place near South Shields, and a committee of scientific men was appointed to investigate the whole question. Mr. GURNEY's plan was again examined, and after full and mature deliberation, the committee arrived at the conclusion that it was perfectly efficient for the purposes which it professed to accomplish. In their report they stated that "the plan of ventilating coal mines by high-pressure of steam was peculiarly adapted for its purpose—at a small expense—and without interfering with the ordinary workings of the mines. It swept the galleries," they said, "almost with the violence of a hurricane, but still was under perfect control"—adding "that it seemed *the most perfect of any invention of modern times.*" Still, though every year there have been 700 or 800 lives lost by explosions in coal mines, and the same number of individuals maimed—maiming, being to a poor person, and especially to one in the condition of a collier, as Lord BROUGHAM truly said, "almost a sentence of starvation!"—10 such years of frightful calamities have been allowed to pass without a single serious attempt to remedy the evil, by enforcing the adoption of a system which, to use the words of Earl ST. GERMANS, "promised to be as much for the interests of humanity as for the material wealth of the country." Now, one would hardly have imagined—after a committee of "scientific men," appointed by Parliament itself, had pronounced Mr. GURNEY's plan to be *peculiarly* adapted for its purpose, and to be, in fact, "the most perfect invention of modern times"—that it would have been left for a private individual, like Mr. FOSTER, of the Seaton Delaval Colliery, nine years subsequently to the publication of their report, to put that plan into practice for the first time in this country. We, in our innocence, should have fancied that the Government, anxious to stay the destruction of human life, and to put an end to the long annual catalogue of suffering and disaster, in connection with an article from which the nation derived so much of its wealth and power, would have been the foremost to place beyond doubt the merits of an invention which so high an authority had commended in such glowing terms.

The position of this country among nations is not due more to Saxon energy than it is to Wall's End coal. If to our steam we owe a considerable portion of our riches and our influence, it must be remembered that we owe our steam to our coal. If our gas-lights are the cause of the security of our streets and homes by night, is not our coal the cause of our gas? If the Englishman's love of home, and all those domestic virtues which the love of home engenders, are due mainly to the comfort of his fireside, assuredly the comfort of that fireside is due to the luxury of English coal. Is it not, then, a national disgrace that so much danger and misery should remain connected with a commodity which is the source of so many blessings to us all? Surely the lives of the poor fellows who pass their days far underground, collecting that which is to drive our carriages, propel our ships, spin our cotton, smelt our iron, grind our corn, bake our bread, cook our food, light our streets, and warm our dwellings—surely their lives are not so utterly valueless to us that we, being in possession of the means of protecting them against a frightful peril, can still allow another 14 years to pass away in idle talk—each year slaying its 700 individuals, and disabling its 700 more. Truly it is high time that we did something more than merely *inquire* into the occurrence of accidents in coal mines, and into the best way of securing the lives of colliers.

Even if it were a *necessity* that the collier should work with the poisonous choke-damp at his feet, and the explosive fire-damp over his head, it would still be sad to think that our riches and our comforts should be purchased at so fearful an amount of suffering. But since the evil is *not a necessary*, but a *remediable* one—since a committee of disinterested scientific men, while investigating the means in use for the prevention of accidents in coal mines, have shown not only that the light of the safety-lamps is insufficient, but that in certain atmospherical conditions those lamps tend to increase rather than diminish the danger (a fact long known to chemical philosophers)—and since, moreover, they have pronounced Mr. GURNEY's plan of ventilating mines by high-pressure steam to be "peculiarly adapted for its purpose," and "perfectly efficient"—it is evident that unless some measures are taken by the Legislature to ensure the adoption of a system which promises security to the miner, the Government will—to use the words which Lord BROUGHAM applied to the mine-owner—be criminally responsible for every death that may hereafter arise from explosion. It is idle to say, with his lordship, that it is "impossible, with the experience of a year and a half, and only in one mine, they can come to a practical conclusion;" for the severe test to which the principle has lately been put, in the extinction of the fire in the coal mine near Manchester, proves to demonstration the efficacy and extreme value of the invention. If it was possible to expel all the atmospheric air, and to force a current of carbonic acid gas, by means of high-pressure steam, through every part of an extensive mine on fire, and to do this so completely as to extinguish every particle in combustion—and afterwards to free it entirely of the carbonic acid, and again fill the whole mine with atmospheric air—assuredly it must be possible, by the same means, to remove every atom of the gas called fire-damp, which, from its low specific gravity and its consequent ascensive power, would be more readily removed than a gas, like carbonic acid, of greater density. Verily, in the words of the committee of 1839, the ventilation of coal mines by high-pressure steam *does* "seem the most perfect invention of modern times," and one in every way worthy of the mind to whose genius we owe our present rapid rate of travelling. Indeed, the two ends are gained by the same simple means—namely, the propulsion of a column of air by a jet of high-pressure steam; and to doubt the efficacy of the principle would be about as rational as to doubt whether, in an air-gun, the jet of compressed air behind the bullet could have the power of expelling the column of uncompressed air before it.

It will be, doubtless, in the recollection of our readers that, some short time since, we drew attention to the Tywarnhayle and other mines, which had been taken up and worked by the Duchy, with the main object of giving employment and relieving the families who must, otherwise, have been distressed by their suspension, and on which it appears that 26,000*l.* has been expended by the Duchy. Having carried on the mines, so as to render them in a good working state it was resolved that they should be offered to the public, and the advertisement appeared for the disposal of the setts—the Duchy being disposed to grant favourable terms, in the shape of dues, and even to make a sacrifice, as regards the amount actually paid for machinery and workings, which, as we have before observed, amounts to a very considerable sum. We have now before us a prospectus which, albeit intended for "private circulation"—as such, indeed, we believe to be the fact, from the circumstance, were it alone, of all mines worked under the same management being what are properly designated, "private adventures," and not scrip or "public companies," with some 6000 or 8000 shares; and it is from this that we shall adduce some remarks, not losing sight of the contrast which the prospectus under notice affords to the many which fall, from time to time, into our hands, but too oft undeserving of our notice. The mines comprised on the setts acquired are—South Towan, United Hills, Wheal Charles, and Wheal Fancy, in the parish of St. Agnes, and Wheal Sparrow, Basset, United Hills, Wheal Clarence, and Wheal Lydia, in Illogan—the latter being immediately west of the Tywarnhayle Mines, and a continuation of the lodes, which can be worked by the same machinery. It is not our object, however, to direct attention to the advantages which may be said to be held out in working the mines, but rather to offer a passing remark on the course pursued by the Duchy, and the constitution of the present company, which being under the control or management of Mr. JOHN TAYLOR with his son, in itself insures the "completeness"—if we may use the term—with which the mine will be worked, not only at surface, but underground; while any "Hudsonian cooking" need not be apprehended.

The Duchy of Cornwall, much to their praise be it said, took up the present setts, and have expended a sum of 26,000*l.* thereon—there being, doubtless, a twofold object in view—that of not only affording employment to the working miner, and most gratefully has such been acknowledged, but also to put the mines in a good working condition by the outlay of capital. This has been fully effected, and the Duchy have now on, as we consider, very liberal terms granted a lease for 21 years, at 1-20th dues, giving up 10,000*l.* out of the outlay already incurred, and thereby, in one sense, making a loss to such extent, or rather, we might say, by holding out encouragement to the adventurer, insuring its return in the shape of dues. The Duchy have, with like liberality, agreed to take the amount to be paid by instalments; while the floating capital to carry on the workings has been estimated at 4000*l.*; and a further sum of 5000*l.* it is considered should be applied to the erection of new machinery, and extension of the workings in the additional mines which have been acquired.

We have only a word or two more to add, with reference to the adventure under notice. We have stated the Duchy have nobly come forward to support the working miner. They are now ready to grant liberal dues, and make a sacrifice to the adventurer. The management is in the most able hands, whether as regards honesty or ability; while talent is at command. The shares have been restricted to 500 in number, on which a deposit of 20*l.* per share is required on allotment. This is business-like, and we should be glad to find that all mining operations were carried on in like manner.

We observed, in a late Number, on the reduction which has taken place in the price of tin and copper ores, and the consequent injury inflicted on our home mining interest; while it may not be amiss again to advert to the subject, and illustrate such by reference to figures which, we think, will clearly demonstrate the advantages derived from free-trade *principles (?)* As regards tinstuff, or ore, it will, we think, be found that, within the past three or four months, a decline of 12*l.* to 14*l.* per ton has taken place, or, say, 25 per cent., which, it is hardly necessary to say, must have a considerable and sad effect on our mining industry, whether considered in relation to the adventurer or the working miner. The quantity announced for sale on the 2d August next, at Amsterdam, is to the extent of 250,000 slabs of Banca tin, which, taking 33 slabs to the ton, would be equal to 7500 tons, divided into lots of 1000 slabs, or 30 tons; the effect of so heavy a quantity being thrown on the market at one time being a natural reduction of the price of the metal.

It may be well to look at the subject in a statistical point of view, ere we enter upon any argument or calculation; while we shall endeavour to act with caution in advancing either figures or opinions; but, having had the opportunity of acquiring information, as we believe, from the fountain-head, we leave to our readers to form their own opinions, and we certainly do most egregiously err, if that they be not found in perfect unison with those we ourselves entertain and have already expressed. The Dutch Government, on the present occasion, are putting forward double the ordinary quantity submitted at their annual sales, being not only the produce of the past 12 months, but the accumulation, or surplus, of many past years—they having, very prudently, heretofore confined their sales to the demand, so as not to deteriorate the price, and create a falling market by any announcement of a surplus, as is the present case. From whatever cause it may arise, we have, it is evident, a surplusage of 3500 to 4000 tons, the consequence of which is not only self-evident, but has been anticipated, in a great measure, by the fall which has already taken place. If that we take the quantity announced for sale as 7500 tons, at 70*l.* per ton, we have an aggregate sum of 525,000*l.*, which is fully equal to the annual produce of this country, and at least double that of the ordinary production of the tin mines of Banca; and hence it must be apparent that the consequence, even were it only of a temporary nature, must be ruinous to our home mines, without caution be observed on the part of the miner, and that the consumer look to himself, irrespective of the smelter. We fear, however, there are insuperable difficulties which will be found to present themselves. In the first instance, the miner requires the means to prosecute the working of his mines, and cannot afford to put by his tinstuff in hopes of better prices; while the consumer is, in too many instances, in the clutches of the smelter merchant, so that he cannot take an independent course—hence the monopoly which now exists.

The attempt, as we have before mentioned, as regards the Miners' Company, to throw open the trade, is known to "one and all" connected with our tin mines, and the present move on the part of the smelters is well understood, and duly *appreciated.* If that they become the principal purchasers of Straits tin, it is their object, at the present moment, to knock down prices at home, so that they may come in at a low figure. Let them once effect their object, we can very well imagine an advance in the price of tin; and, with such conviction on our mind, we would earnestly impress on the miner the importance of either holding back his produce, or reducing the labour employed, until a change takes place. We are well aware, that in pursuing such course, the working miner is, to a certain extent, prejudiced, inasmuch that employment is not found; but it must be borne in mind that such is only for a time, and that with better prices there will be an increased demand for labour. On the other hand, were the mines worked to their full capability, then it would be that with an influx of tin prices would go down, and the result be the suspension, and, in many cases, the total stoppage of several mines, more especially those which are deep, and costly in their working. The stocks in hand of the consumers we believe to be far less than ordinary, and if there be only on the part of the miner a watchful care displayed, we have no doubt whatever but that the price of tin will recover—the present decline being attributable solely to the extra quantity thrown upon the market, and the "moves" of the smelters. We do not deem it necessary to prosecute the subject further, but feel that we are only doing our duty in directing attention to the present state of the trade, and the cause to which the decline is attributable, trusting that the day is not far distant when we may congratulate the miner and the mine adventurer on better prices and remunerative returns, which can hardly be expected while the present depressed prices range in the market.

IMPORTATION OF ZINC.—A large quantity of foreign zinc having arrived in the river in the form of rods, and quite in a preparatory state for converting into bolts, it became a question whether such metal could come under the denomination of *rolled* zinc, which, by the tariff of 8 and 9 Vic., cap. 86, is admissable free of duty, while, if otherwise manufactured, it is subject to an impost of 10*l.* 10s. per cent. It appears that the zinc is first rolled into sheets, cut into strips according to the size of the rods required, rolled up lengthways, and again passed through semicircular rollers, when it comes out a perfect rod ready for cutting into bolts, or other articles, of any length required. The Commissioners of Customs, after a careful consideration of the matter, and being unable to convert these rods, which have somewhat puzzled them, into any thing else but *rolled* zinc, they have given directions that in future all such cargoes are to be admitted free of duty.

IMPROVEMENTS IN THE STEAM-ENGINE.—Messrs. J. and G. Davies, of the Albion Foundry, Staffordshire, have just obtained a patent, the improvements sought to be secured by which are as follow:—1. A mode of converting rectilinear into rotary motion, by supporting the crank pin in brasses which slide in the cross-head of the piston. The brasses, as they wear away, are to be screwed up tightly, and the piston is made to pass through the crosshead and give motion to the piston of a blowing machine.—2. The rectilinear motion of the piston of a blowing machine is converted into a rotary one, and communicated to a shaft by means of a rod keyed loosely to the end of the piston rod of the blowing machine, and passing through a sliding stuffing box in the side thereof. The other end of the rod is connected to the crank pin.—3. The steam induction and eduction ways, both at the top and bottom of the cylinder, are each worked by two valves fixed on the same spindle, which are constructed of slightly different diameters, so that the pressure to be overcome is that due to the difference in the diameters.—4. The same principle is proposed to be applied to the construction of valves in the feed-pipes of steam-boilers.—5. The apparatus for working the dampers consists of a pipe communicating with the boiler, and closed at the top by a valve, which is weighted at less than the safety-valve. Above the valve is placed an inverted vessel, which is connected at top to the damper, and is fixed in equilibrium, with the sides dipping into the water contained in the exterior casing of the steam-boiler pipe. This casing is provided with an overflow pipe. It follows that when the valve is opened by the increased pressure of the steam, the inverted vessel will be lifted up, and the dampers partially or wholly closed. When the valve is closed, the inverted vessel will descend into its first position.—*Claims:* The mode of fixing the cross-head to the piston, so that it may pass through it and give motion to the piston of a blowing machine: also, the use of the brasses. The arrangement for converting rectilinear into rotary motion. The mode of working the steam valves. The method of working the feed valves of steam boilers. The mode of working the dampers.

On Gold, and Gold Mines.

BY WILLIAM BIRKMYRE.

No. II.—GOLD DIGGINGS, OR WASHINGS, AND GOLD MINES.

Until of late years, it was generally supposed that gold was confined to few countries, and associated with but few minerals. More recent researches, however, have demonstrated that opinion to be fallacious; for this metal is now found in very considerable quantities in (besides the well-known gold countries) the great eastern region of Siberia, the United States, and also in their new acquisition, Upper California; and it is also said to be found abundantly in the southern part of New Holland. In smaller quantities it is found in England, Wales, Ireland, and Scotland, and in nearly every country in Europe. Besides the usual substances containing gold, it is now ascertained that limestone in Russia affords a certain per centage of the metal; and it is also known to exist in magnesian limestone. I have seen it in malachite (hydrous carbonate of copper), and which may explain why gold exists in such quantities in the fine copper of Chili and Japan, and why it is likely to be found in the copper smelted in South Australia. From the above facts, there can be no doubt that gold is neither limited to few localities nor to few minerals, and were it sought for in substances not possessing the usual colour, it would be found still more abundantly.

It is also generally believed that the purest metal comes from Africa; but late experience has proved that as fine gold comes from 56° north latitude as ever came from the torrid regions of Africa. There can now be no doubt that it is a vulgar error, nearly as great as the supposition that coals were only to be obtained in Great Britain; while, in fact, they are found abundantly in other countries, and of excellent quality, and were, probably, mined for in one country—China, to wit—long before the inhabitants of our own isle were aware of the inexhaustible treasures they possessed.

A great deal has been said of the pernicious effects arising from gold mines; but, were a comparison instituted between them and the cotton trade, it is probable that most persons who made the inquiry will admit that they are not one-half so destructive to health or morals as the cotton trade of this country and the United States, as at present conducted.

In regard to the gold of the ancients, it appears that in the time of the Jews much gold was procured from Ophir, probably Ethiopia; where, indeed, in the adjoining country, a Russian engineer has lately announced that gold exists in as great abundance as in his own country. Under the Persian empire immense quantities were obtained in Lydia, Phrygia, and the north-eastern part of that empire, probably in the very regions which now yield it so abundantly in Russia, more especially the southern ranges of the Altai Mountains, known as the Tar Bargatai. Under Phillip and his son, Alexander the Great, the Greeks raised gold from productive mines in Thrace and Thessaly. During the Roman empire it was obtained—besides the usual sources in Asia and Africa—in Northern Italy, the Pyrenees, Spain, and in Transylvania.

The dark ages were not favourable to the development of the gold and silver mines, and their produce generally fell off to a great extent; but, notwithstanding this period, and the enormous sum of 178,000,000*l.* in gold and silver possessed by one king, Ptolemy Philadelphus, there can be little doubt that mankind do now possess more of the precious metals than at any former period of the world's history; though, probably, no single state can now command near so much as the successor of the great Alexander. The fact that America alone has poured forth treasure up to the beginning of the present year, to the prodigious sum of 1,511,000,000*l.*, which is according to the best data I can find, will induce the belief that, great as were the precious metals in antiquity, still their amount is now more than rivalled, albeit the wear and tear of the 1,511,000,000*l.* in the 357 years that the New World has been known to Europeans.

In Great Britain, gold was found in the time of the ancient Romans, and was one inducement for them to conquer the country; but it does not appear to have been got in any great quantity until the time of James IV., in whose reign a good deal was found in Scotland, and also in that of his successor, James V. According to Pennant, no less than 300,000*l.* sterling of gold was found in the reign of the latter; but that amount is no great sum, when compared with the value of the mines of iron ore in the same country—Scotland having, last year, produced 580,000 tons of cast-iron, which, at the present price of 2*l.* 4s. per ton, amounts to the large sum of 1,276,000*l.* in a year, which is about 25 per cent. of the value of the rich gold mines of Russia; in the short space of 20 years, one country has increased from 37,700 tons of cast-iron, which, at the *then price* of 5*l.* 10s. per ton, was equal to 207,350*l.*; and the other has increased from 23,054 lbs. troy of gold, of the value of 1,076,198*l.*, to 87,756 lbs. of the value of 4,100,000*l.* I have taken the produce for last year of the Russian mines to be 2000 poods; for though a statement lately appeared in the "City Article" of the *Times*, that the produce was less than the previous year, it is quite possible that that statement may refer to the quantity actually *received* at the Royal Mint during the year, and not the total produce of the mines; for usually 200 to 300 poods are expected to be transmitted as the complement of the produce of the year, which would make the yield for 1848 equal to 2000 poods.

But, to return to the subject matter, the gold of Scotland was found chiefly around the lead hills in Lanarkshire. Some of it was found here in the gravel beneath the moss, and much of it in rivulets, where pieces were picked weighing upwards of ½ lb. A piece in the crude state weighed 2 lbs. 3 ozs. troy. Occasionally a little of the metal is picked up to this day. A piece of gold, weighing 1½ oz., was recently found in Sutherlandshire.

The discovery of gold in Ireland is but of recent date. Previous to 1796 very little appears to have been obtained, but in the autumn of that year "a man crossing a brook found a piece weighing about ½ oz." It occurred in the Ballin Valley stream of the County Wicklow, near to the Croghan Kinshela Mountain. Government collected 78½ lbs., which produced 3675*l.* The gold, on the average, contained 9·8 per cent. of alloy, which was chiefly silver. The peasantry, on their own account, are supposed to have collected about 6000*l.* worth. The metal here, as elsewhere, was obtained in from the most minute particles to lumps which weighed 7 ozs., 9 ozs., 18 ozs., and even 22 ozs. All attempts under the Government officers to find the lode were unsuccessful.

From what I have before stated, it is unnecessary to name all the substances in which gold is found. It will suffice merely to mention that it is obtained in large quantities in quartz, granite, gneiss, mica-slate, clay-slate, limestone, magnesian limestone, and in alluvial deposits of manganesic oxide of iron, ferruginous sands and clays. Nothing more need be said of the directions of the lodes, or veins, in which it is found, than that it is obtained in every possible direction, and in a vast variety of positions.

In respect to collecting the gold from gold sands, the simplest mode unquestionably is that which has endured for thousands of years in Africa. On the west coast of that continent, for instance, the negroes after harvest begin to wash the sands, and a brown coloured clay, in the dried shell of the gourd (calabash). Some care is requisite to prevent the gold being washed away, as it is often in a most minute state of division. This operation, therefore, is consigned to the women. Where the inhabitants think there are greater deposits they dig pits for the metal; but a hoe and a spade, and two or three calabashes, are all that the negroes use. With common diligence much gold is collected; a person often having it in his power to collect 15*l.* worth of gold in a season, even by the above crude apparatus.

The greater part of the gold of the ancients was obtained by washing alluvial soils in pretty much the same way as is practised in the present day. And it is most likely that a portion of their gold was extracted, as it is just now, by the aid of mercury, as they were well acquainted with the properties of this metal. No positive information, however, has come down to us that they used mercury in this way, but the above inference accords with what Pliny says on the subject of purifying gold by mercury, and is confirmed by the fact, that mercury was employed in the European gold mines when gold and silver existed in visible metallic particles, long before the application of mercury in Peru in 1566, where it was first used for the extraction of silver *mineralised* by sulphur, chlorine, or bromine; and it is further strengthened by Jameson's *Report on the Geology of the Punjaub, &c.* (*vide Asiatic Journal* for 1843), where, in that little known and lately conquered territory, the gold washers use mercury to collect the precious metal, after which they submit both to heat, when the mercury is volatilized; which method may have continued as far back as the days of Alexander the Great.

Gold is now obtained with great skill in the north of Piedmont, near Monte Rosa. It is here raised from mines in the mountainous region which separates Piedmont from Switzerland. The metal in that district is found in a mixture of iron pyrites, blende, and galena. The workings are carried on by following the vein, which is not so hard as the gneiss which incloses it. When the ore is brought to the surface, it is first broken and picked, and afterwards crushed smaller by a pair of stones, then amalgamated in mills of a simple and peculiar construction—the barrel system of amalgamation not having succeeded in this district. The loss of mercury is but one-quarter of the quantity employed, which is a little less than one per cent. of the crushed ore. The gold in the rough ore varies from 1 lb. in 2000 lbs. to 1 lb. in 100,000 lbs. This quantity, and the trifling expense of about 40*l.* for a pair of stones, and four amalgamation mills, with other necessary apparatus, has been sufficient to keep the workings in activity for centuries. These mines are conducted by private individuals, who, by their enterprise, probably contribute annually 600 lbs. troy of gold to supply the wants of man. The profit to a proprietor occasionally amounts to 1100*l.* per annum.

In Transylvania, gold is obtained in streams, or alluvial soil, also from ancient mines. The gypsies, who are numerous in that country, occupy themselves mostly in picking up the precious metal in streams, for which the Austrian Government exacts from every one so employed at least 19s. 6d. per annum. The most celebrated mines are near Zalathna, in the basin of the river Maros. A mine in this locality, called the Maria of Loretto, yields auriferous pyrites, which sometimes contains 28 lbs. of gold per cwt. of the ore. Some of the galena (sulphuret of lead) of the same place, contains about 1 oz. of gold, with 30 ozs. of silver, in a ton of ore; but the gold here is chiefly found in iron pyrites, which abounds in decomposed porphyry. The metal is separated from the matrix by two methods. The first, and that which has been practised from time immemorial, consists merely in pounding the ore, and then washing it on inclined tables, covered with canvas—the fibres of the canvas detaining a considerable portion of the gold; while the earthy matter, and the greater part of the other metallic substances in the ore, are carried off by the water. This plan is similar to that practiced long ago by the aborigines of Peru, with the difference merely that they used the skins of the llama and the vicuna. The Brazilians have, for more than a century, used the skin of the buffalo in this way; and the plan still obtains in at least one of the three English companies who work gold mines in Brazil; yet, though still in use, it is admitted that as much as 33 per cent. of the gold is lost.

The metal after being washed, as described, is usually collected into a wooden bowl, and then amalgamated in a mortar, and the mercury distilled, leaving the gold behind. In some of the valleys, it is customary for each family to have a trough and a washing table. The men raise the ore, while the women break it, and attend to the washing of the schlich—pounded ore; and, where the ores are rich, the inclined tables are preferred to the amalgamation mills. In some establishments the ores are amalgamated in Tyrolian mills, and are found profitable when they contain 1 of gold in 533,000 of the rough ore—mercury being allowed to the extent of 1 in 7466. Most of the mines are conducted by Government; but some are carried on by private individuals, who pay 10 per cent. of the produce to the State.

According to Becker, in his *Handel's Lexicon*, the average annual produce of the gold mines of Transylvania for the five years ending with 1834, was equal to 2140 lbs. 2 ozs. troy, and those of Hungary in the same period 1615 lbs. 10 ozs., and the other portions of the Austrian Empire yielded 105 lbs. 11 ozs., raised chiefly in Upper Austria and the Tyrol, the total quantity being 3861 lbs. 11 ozs. troy. The most recent intelligence regarding the mines of Transylvania and Hungary appeared in the *Annales des Mines* for 1845, tome vii.; M. Audibert, the writer of the memoir, states at page 96, that Transylvania produced gold in 1844 equal to 1880 lbs. 7 ozs. troy, and Hungary, 977 lbs. 8 ozs.—total, 2868 lbs. 3 ozs. troy, of which Lower Hungary yielded 376 lbs. 1 oz.; Upper Hungary, 75 lbs. 2 ozs.; Nagy Banya, 452 lbs. 3 ozs.; Banat, 75 lbs. 2 ozs. = 977 lbs. 8 ozs. The quantity of silver raised in the same period was 51,153 lbs. 5 ozs. troy. In this year the value of the gold obtained was less than that of the silver, but generally the former predominates. Although the mines of Transylvania and Hungary have been so celebrated for ages, they are quite eclipsed, so far as value is concerned, by the mines of Russia, Brazil, and of the United States, since one mine alone, the Gongo Soco, belonging to the Imperial Brazilian Mining Association, produced in 1829—and within four years of the workings being undertaken by that company—4190 lbs. of gold; and now the mines of Transylvania are surpassed by the increasing produce of the mines belonging to the St. John d'el Rey Company, they having produced in the 12 months, ending with February of this year, gold to the amount of 2213 lbs. troy.

[*To be continued.*]

MINING IN CENTRAL AMERICA.

An addition to the scanty information possessed regarding Nicaragua has been made in the publication of a little work called *Wild Life in the Interior of Central America.** The author having previously acquired some mining experience in Chili, was tempted to explore the interior of Central America, from the report he had heard of the mineral riches it contained, and although the total absence of anything in the shape of a regular Government, together with the unenterprising spirit of the people, seem to have deterred him from prosecuting his original intention, he gives some few details on the subject which it may be desirable to notice. In Central America a considerable difficulty is presented to the discovery and following up of metallic veins by the depth of soil, extending from 12 to 20 feet, and consisting of decomposed vegetation, by which they are hidden, whereas in the rocky hills of Chili it is an easy matter to follow up a vein for some distance on the surface. Another distinction is, that while in Chili every great copper vein takes its direction north and south, and the gold and silver mines generally run from east to west, in Central America the reverse is to be observed in each instance. Regarding the copper ores, it is remarked—"The copper ores that I have seen in Central America are almost all uncombined with sulphur or any other combination that requires calcining to be got rid of; they might all be smelted in a common blast furnace, with the aid of equal quantities of ironstone, which lies in large quantities on the surface of all the hilly country." Regarding gold and silver, it is stated—"In some of the districts of Central America there are remains of rather extensive gold and silver mines, and one or two of cinnabar. Contrary to the case in the copper ore, they are generally combined with a large proportion of sulphur, and are invariably so hard that it is wonderful how much has been done without gunpowder, for there is not a single mark of a blast. They have been abandoned for ages, and it will be long, very long, ere they are worked once more. The difficulty of finding a pair of grinding stones, and renewing them when worn, cutting them, transporting them through trackless forests, and making a mill to turn them, together with the want of quicksilver, and the treachery of the Government, would prove too much for the most enterprising; but there is a fair quantity of gold collected in Central America, although it does not speak much for the industry of the upper and middle classes, who might organise a better mode of working. The silver mines that I have found have fine broad but rather irregular veins, and the ore is combined with a great quantity of sulphur, and a large proportion of lead. Both the ore and the stone are very hard, but the former is remarkably clean: and though, for want of a silver assaying apparatus I could not get a good assay, yet, by the means in our power, they would produce about 15 marcs of silver the ton. About 20 tons of clean ore were extracted, broken up to a proper size, and piled up. They are most likely lying there still, covered over with some fine specimens of Central American vegetation, and the pile itself a fine specimen of Central American legislation. The mineral riches that are deposited in the bosom of these mountains are, no doubt, very great; but the working of the mines is so difficult, from the ignorance of the workmen, who have to be taught everything, their invincible idleness, and the vacillation of the Government, that I believe it will be long before anybody will be found to advance capital for prosecuting such a forlorn undertaking."

Among the specimens of legislation on mining affairs, it is mentioned that at one time a decree was issued exempting those who would dedicate themselves to this branch of enterprise from every kind of tax or contribution, and conferring on them all sorts of privileges. Upon the faith of this mines were explored, good lodes discovered, capital invested, miners engaged, and fine rich ore brought to the surface. In a few months the decree was rescinded, and a heavy duty was established on the exportation of crude ores; and, finally, there appeared a third decree prohibiting absolutely the exportation of crude ores of any kind, "and this under the pretence of encouraging smelting in their own country, at the same time knowing there was neither a reverberating nor blast furnace from one end of it to the other, not a single fire-brick, and not a single person who could build or work any sort of furnace."

Deterred by these circumstances from carrying on his mining projects, the author, during a two years' residence at a spot in the interior near the boundaries of Nicaragua and Segovia, devoted his attention chiefly to field sports and the pursuits of natural history. His general statements seem to confirm the description we have already quoted from other sources of the healthfulness of some parts of the country, its natural capabilities, the beauty of Lake Nicaragua, and the facilities of communication with the Atlantic presented by the River San Juan. He also shows that the incessant revolutions by which the country has been ruined have been invariably got up by a handful of vagabonds, presuming upon the indolence and timidity of the mass of the population, and who would never have dared to show their faces within reach even of but a few hundred settlers of the Anglo-Saxon race.

* *Wild Life in the Interior of Central America*, by George Byam, late 43d Light Infantry: John W. Parker.

IMPROVEMENTS IN GIRDERS.

[Specification of patent granted to John Gardner, of Wokingham, engineer, for improvements in girders for bridges and other structures. Inrolled, June, 1849.]

In commencing his specification of this invention, the patentee states that by the term "girders," used in the title of the letters patent, granted to him as above-stated, he means all beams, bars, and bearings used in engineering and architectural buildings, or structures, where great tensile and compressive strength is required, as in the construction of bridges, viaducts, aqueducts, &c.—the improvements consisting in forming a girder of cast and wrought-iron, combined together in the manner described. The drawings annexed to the specification exhibit views of a girder, suitable for a bridge, or similar structure, of 40 ft. span. The girder is mainly constructed of cast-iron; but to the lower flanges thereof two bars, or rods, of wrought-iron, placed at a short distance apart, are connected by being let into the same in the fashion of a dovetail joint. A view of a girder, constructed mainly of cast-iron, with only one bar, or rod, of wrought-iron introduced, is given and described in the specification; also views of railway bars, or bearings, in which the plan above-stated seems to be reversed, inasmuch as the cast-iron is made to form a flange, or supporter—the bar, or bearer, of wrought-iron being let into it.

Having described the nature of his invention, and the manner in which it is to be carried into practical effect, the patentee states, that what he claims is the improvements in "girders" (using the term in the sense above stated) of cast-iron and wrought-iron, combined in the manner described.

Patent-office and Designs Registry, 210, *Strand, June* 14.

THE ELECTRO-GALVANIC ENGINE.

In the *Mining Journal* of the 5th May last, we gave a description of the model of an engine in which the prime mover was a current of magnetic electricity from a galvanic battery, invented and patented by Mr. Soren Hjorth; we also stated that one of much larger dimensions was in course of construction. We have, during the past week, had an opportunity of inspecting this larger engine, which is completed, and now at work at Messrs. Robinson and Sons, Pimlico, and fully bears out the opinions we ventured to express on a former occasion—that after all the attempts which had been made to adapt electro-magnetism as a motive-power, it was left for the present patentee to obviate all previous difficulties, and obtain what had hitherto been found impracticable—a sufficient length of stroke for the general purposes of machinery. The model, which we previously described, had a vertical motion, with oscillating magnets, on the same principle as the cylinders of an oscillating steam-engine; the one under notice is constructed somewhat differently—the two hollow masses of soft iron, forming what may be termed the cylinder horse-shoe magnets, with the solid ones, or piston magnets, to which is attached the piston-rods, are placed horizontally, and are not oscillating, but fixed. The piston-rod works a crank shaft, on which is the fly-wheel; and an eccentric on the shaft, by a connecting rod, works the alternating motion for reversing the current at every stroke. The large magnets are 11 inches by 12 inches in size, the solid ones somewhat smaller; in the former are several rods of different lengths, which enter apertures in the latter; the magnetic force is thus presented at various points during the entire stroke, and by increasing the number and length of these rods, and the length of the magnets, a stroke of any length desired may be obtained. In the model under notice the crank is 6¾ in. from centre to centre, thus giving a stroke of 13½ in. At present the large magnets are surrounded with only ten coils of wire, and the smaller eight; the battery consists of six divisions, of ten pairs of plates in each, making 60 pairs, and with this arrangement the power is very great, of which an idea may be formed by grasping the cross head attached to the piston rod, and attempting to retard its motion. Now, as by adding to the number of coils the magnetic intensity may be increased, and by extending the battery more powerful currents are developed, it is clear that having established a practicable mode of obtaining a sufficient length of stroke, the object remaining to be obtained is solely the application of some modification of battery, by which unlimited power may be obtained, in proportion to the size of the magnets and the number of coils, and with an economy which shall bring it within the cost of the steam-engine or other motive-power. Mr. Hjorth informs us, that having so far perfected his engine, he is now turning his attention to this part of the subject, and expects to obtain a form of battery in a very short time, which will last for days in continuous operation, without requiring renewal, and in which the destruction of the negative element hitherto the principal *item* of cost, will be almost nominal. On the occasion of our visit a number of gentlemen connected with railways and engineering works were present, and all expressed their gratification at the ease and smoothness with which the engine worked, and, under the incomplete arrangements, the power developed. A general conviction appeared to prevail that galvanism, as a motive-power, might now be considered established as practicable. Should such be the case, of which we have now no doubt, one great source of fatality to human life will be avoided, that of explosions of steam boilers. In the arrangements for galvanic motive-power there is perfect safety, which is certainly no mean inducement heartily to desire its success.

IMPROVED MODE OF ARTIFICIAL ILLUMINATION.

BENZOLE GAS, OR THE AIR LIGHT.—We have been much gratified by an inspection of a new light apparatus the invention of Mr. Mansfield, of Clare Hall, Cambridge, in which both the material used and the mechanical arrangements are alike new, and subjects of patent right. As few of our readers are probably aware of what *benzole* consists, we must inform them it is a highly volatile hydrocarbon, and one of six somewhat similar products which Mr. Mansfield obtains by the distillation of coal-tar.

From this material, we find by the specification, the inventor first produces what he terms *alliole*—an extremely volatile liquid hydro-carbon, applicable to all the purposes for which benzole may be used, but much more volatile:—

Benzole is a hydrocarbon which boils at 176° Fahr., being of the same volatility as spirits of wine. It is manufactured in the same manner as the alliole, by distilling a little farther; for many purposes it is useful to receive these two fluids together. They are both excellent solvents of gutta percha, of India-rubber, of wax, of grease, and oils of all sorts, of mastic and many other resins, of copal and Animé, by exposing them to the vapour of the fluids, so that it shall condense upon the gums; of shellac, by mixture with alcoholic or pyroxylic spirits; of camphor, sulphur, phosphorus, and many other substances. The solutions of gutta percha, or caoutchouc, or these mixed, when spread on a smooth surface, leaves, on drying, which it does rapidly, a varnish, which may be peeled off in the form of a thin membrane; or, spread on the skin, forms an excellent plaster. They may be used as substitutes for ether in various pharmaceutical processes, and for many of the purposes to which alcohol is applied. Benzole, if inhaled, acts in the same way as chloroform and ether, in procuring insensibility to pain. It is applicable to the manufacture of perfume, as described under "nitro-benzole." Benzole and alliole form the part of coal-tar, which is separated from it by treating in the manner proposed for bituminous matters in general, and, equally with such spirituous substances prepared from these other tars, is applicable to the production of vaporised air, in the manner described in the third part of the invention. It is also particularly applicable to the manufacture of fuel for vapour-lamps, as described also in the third part. *Toluole* is less volatile than benzole, but with similar properties, and more volatile than oil of turpentine. *Camphole* is obtained by distilling the residue, after the toluole has been obtained; it forms a substitute for camphine, and also a solvent. *Mortuole* is prepared by rectifying the heavy or dead oil which comes over between 330° and 500° Fahr.; it forms a substitute for fixed oils, and, by mixture with spirit, makes an excellent lamp-oil. *Nitro-Benzole* is a fragrant heavy oil, made by dissolving the light oils of coal-tar (for which rectified benzole is preferred) in strong nitric acid, and then diluting the acid with water, which separates the acid formed in the process. It is useful as a substitute for oil of bitter almonds, in perfuming soap, or flavouring confectionery, and has no poisonous properties.

In employing some of these volatile products to the purposes of artificial illumination, the patentee prefers benzole alone, or with alliole, and he has produced an apparatus for burning it, in which no purifiers, condensers, retorts, furnaces, or meters, are necessary, and no coke, tar, or other impurities are generated. The products of combustion are as pure as those of the finest wax, and will not injure gilding, plate, paintings, or the finest textures. The principle of Mr. Mansfield's invention is the naphthalising of any non-luminous gas by benzole; many of the gases will answer the purpose—hydrogen, carbonic oxide, gas of poor quality, such as that distilled from wood, or, lastly, common atmospheric air. The apparatus, which we have inspected in Regent-street, is for burning benzole through the medium of a fluid wick of air. An air-pump forces air into a receiver similar to a gasometer, from whence it is conveyed through a vessel called an evaporator, filled to a regular height with benzole, and from this the service pipe leads off to any distance where the burners may be required, a small jet is directed from this main against the side of the evaporator, which will always keep the benzole in a sufficient state of vaporisation. The odour of benzole vapour is not unpleasant, but sufficient to betray it in case of leakage. It is applicable on any scale, from the compass of a city to that of a table-lamp; the light is of perfect whiteness, and of great intensity, and at least as cheap as coal gas; at a distance from the sources of coal, cheaper; it may be rapidly lit or extinguished, and the consumption may be regulated to the greatest nicety, according to the varying requirements of time and place.

Original Correspondence.

IRON STEAM-SHIPS AS VESSELS OF WAR.

Sir,—The reply of Mr. John De la Haye, in your Journal of the 19th May, to my letter, of a previous date, evinces a wish to gain information, and to improve mechanical science, and would have been noticed ere this by me, had not other and pressing business occupied my attention. The science of iron shipbuilding only dates its birth from a very recent period, and, like every other deviation from the beaten track, has had its difficulties to contend with, the chief of which have been the want of practical experience as to the best adaptation of the material for the purpose intended, and more particularly the prejudice of seafaring men, and the interest and ignorance of the builders of wooden ships; the latter fearing that, should this novel application of iron to the construction of the marine of the country become general, "Othello's occupation would be gone."

The *Nemesis* was, as Mr. De la Haye states, an experimental craft, and, for her day, turned out anything but a failure. With respect to the vessels in the "Plate," I have before stated that they were no more adapted for purposes of war than any other merchant steam-packet; and as to the iron being "as brittle as glass," there is little to be drawn from that fact (if it be one, which I doubt), it being quite notorious that there is abundance of bad iron manufactured, and, consequently, if not properly looked after, such may be employed in the construction of iron ships, as, under similar circumstances, inferior timber is often used in building wooden ships; therefore, before coming to any conclusion on that head, we should know that the merit of the iron had been properly tested and proved as to its fitness for its intended purpose. I may state, by the way, that there are two kinds of iron known to practical men, having the technical names of "red short" and "cold short." The first is strongest when cold, and is, therefore, best adapted for chains, anchors, and iron ships, as they are always in a cold state when they are subjected to a strain. The "cold short" bears heat the best, both in the moulding into shape and in the after strain, where heat is applied; hence its applicability to boilers, &c. I do not mean that either of the above qualities should be in excess, as really good iron is fitted for either hot or cold strain, but in the ordinary kind of iron, generally used for shipbuilding, and called "best crown," the above distinction should be attended to.

As to the splinters of iron being more dangerous than shot, the comparative merits of wood and iron cannot be fairly tested, as it is well known to every naval officer who has seen service, *that the splinters of wood are far more fatal and dangerous than the shot itself*, in the proportion of even three to one. Now, unless we have the statistics of the casualties aboard the iron ships in the action in the "Plate" referred to, and the quality of the iron, we cannot draw any just conclusion. Should this meet the eye of any experienced and unprejudiced officer, who was on board the vessel referred to, his giving a full account of the sections of the injured framing, plating, &c., and of the injuries from shot and from splinters, would be a boon to science. I can with confidence assure Mr. De la Haye, that the network of iron *would* prevent shot from going through it, but, without diagrams, my reasoning could not be made distinctly intelligible. I do not mean to assert that the outside plating might not, in some instances, be destroyed by point blank shot, but splinters, if such should arise, could readily be prevented by wood ceiling, or the patent Kamptulicon, as no piece larger than 3 inches diameter could escape the network to reach the said ceiling. In the event of shot striking and breaking the outside plate under the water line, I would, to prevent the vessel making water, have an iron deck at such a depth below, that at the greatest angle the hull of the vessel could make, the deck would be below where the shot could strike, with combings sufficiently high to prevent the water getting down to the lower hold.

Mr. De la Haye is both right and wrong in respect to iron not possessing repelling power; in a large solid mass it certainly has not this power, but in bars and sheets, supported only at intervals, it assuredly has, from its acting with the property of a spring; and Mr. De la Haye must remember that the shot is of iron as well as the resisting substance, although a more brittle texture. It is obvious that a combination of heavy blows on one particular spot will ultimately destroy the adhesive qualities of the iron; but, then, can shot be directed so as to hit a moving body, like a ship, with the same precision that it can on a fixed object. The principal reason Mr. De la Haye assigns for the inadmissibility of steamers as vessels of war, is the risk of shot penetrating their boilers. Now, this objection has latterly been removed, by placing the whole machinery so low in the hold, that shot cannot touch it, if even it entered the ship. This can be, and has been, effected, especially with screw-propelled vessels.

It would occupy far too much of your valuable paper (and I fear that I have trespassed too largely already in that way) to give Mr. De la Haye anything beyond a mere outline of the method which can be adopted with iron vessels to suit them for war purposes, but if Mr. De la Haye wishes further information (and he can obtain my address at the office of your Journal), I will most readily furnish him with more extended data.

Newcastle-on-Tyne, June 11. ——— J. H. S. C.

RAILWAY PRODIGALITY—No. I.

Sir,—Recent disclosures relating to the malversation of directors, and the "cooking" of railway accounts, have very naturally excited considerable alarm among shareholders; and the public indignation has been very justly directed against the authors and abettors of these disgraceful practices. Numerous committees of investigation have been appointed, and the results of their labours, so far, have shown the necessity there was for such inquisitions. If these inquiries be honestly and fearlessly prosecuted, much immediate, and some prospective good can scarcely fail of being produced. The despotic, and all but irresponsible, power of the directors has received a severe, but a wholesome, check; and they have been obliged, for the first time in their existence, to bow their heads in meek submission to the will of their constituents. But, unless the shareholders are on the alert, the control thus obtained will speedily vanish, and they will again have to content themselves with such curt answers to their inquiries as the directors were wont to give them. Were measures of a permanent nature to be adopted, by which the complete controlling power of the shareholders could be secured, a great and lasting benefit would be obtained, and a good administration of their affairs propitiated.

A rigid inquiry into the past expenditure will be but a bootless task, unless some useful lessons are deduced from it, and a rigid economy enforced in the future administrations. An examination of the half-yearly accounts show an expenditure which, if not extravagant, is at least on a most liberal scale, and without that special regard to prudence which is usually exercised in private life. The truth of the accounts is doubtless an important question, and, when doubted, imperiously demands investigation. But if these inquiries be limited to this object only, the future prosperity of railways will not be materially promoted by them. The attention of these committees ought to be steadily directed to the first cost and annual expenditure; and they must be most unfit for the duties of their office if they do not discover ample grounds for a thorough reformation in the present mode of conducting the business of railways.

The prodigality which is so universally prevalent in the conducting of railway affairs is not inherent in the system, but has been gradually introduced into it since the opening of the London and Birmingham. The example was first set by the metropolitan railways, and it has now diffused itself throughout the whole kingdom; lavish expenditure in works, large establishments of men and officers, and high salaries, are so common that it has been imagined that the business could not be efficiently conducted without such prodigality, and that a wholesome economy is incompatible with good dividends. Having slept on this solacing belief for 10 or 15 years, the proprietary are somewhat out of humour at having their dreams of large and increasing dividends rudely disturbed, and at being aroused by the diminution or stoppage of their half-yearly draughts; yet they were consenting parties to the extravagance, from the effects of which they are now suffering; and, although it is too late to remedy the whole of the evils, yet much may be done to ameliorate them, and some instructive and profitable lessons may be learnt as regards the future management of those concerns.

That very considerable savings, both in the first cost and annual expenditure, may be made without in the slightest degree diminishing the efficiency of railways, scarcely admits of a doubt—or, if it does, such will be speedily dispelled on looking over the half-yearly statements of any of the principal companies. The more fully to appreciate these accounts, it will be necessary to divide the inquiry into several heads, under the titles of first cost and annual expenditure, and then divide the existence of a railway into three distinct periods—viz.: 1. Before the Act is obtained.—2. The period of construction.—3. When completed and in full operation. The expenses of obtaining an Act of Parliament for a new railway has gone on steadily increasing without exciting much remark, and, what is infinitely worse, the work is generally so imperfectly done as to induce repeated applications to the Legislature for what are called amended Acts, which amendments have to be again and again amended, and are never made perfect, even by accident. The time was when lawyers and engineers avoided an amendment on the original Act, as if such a thing necessarily implied want of judgment, foresight, or culpable negligence, on their part, and every expedient was resorted to in order to do away with the necessity of going to Parliament a second time. In consequence of these squeamish professed punctilios, amended Acts were rare in the primitive times; and when it unfortunately happened that, from some oversight or omission in "drawing the bill," error in the levels, or in the direction of the line, an amended Act was absolutely required, its necessity was always acknowledged with reluctance, and it was prosecuted as quietly, cheaply, and unostentatiously as possible. Such "nice honour" was, doubtless, highly advantageous to the shareholders; but in those days people had very simple and crude notions about railways—both employers and employees were in the most profound ignorance of the capability of the system to produce inexhaustible wealth; and, as this great truth gradually dawned upon them, it speedily dispelled a "code of morals" so ill-calculated to develope the mighty resources of this new element of human greatness.

If not grand in itself, this discovery and its consequences has produced much grandeur in railway officials, and the sovereign of these realms cannot boast of better paid, more sumptuously attired, gorgeously lodged, and more daintily fed, servants, than those who condescend to receive the fees and salaries from the poor dividendless shareholders. What was once the exception has now become the rule, and amended Acts are "as plenty as blackberries" every session. All novices go timidly and awkwardly about their business, and it is an old saying, that "practice makes perfect," both of which axioms have been beautifully illustrated in "the committees upstairs" on railway bills. An Act is little short of an annuity to all the professionals engaged in obtaining it; and, instead of its being viewed as somewhat disgraceful to be concerned in amended bills, year after year, with certain and unvarying regularity, it is now considered as "a very good thing," and indicative of great tact, talent, and perseverance. This improvement in railway morals has been a fruitful source for the investment of capital in more ways than one, and several very great men have been produced in consequence.—F. G. S.: *June* 11.

WORKING RAILWAYS BY CONTRACT.

Sir,—In your valuable Journal of June 2, I read some remarks on the last page, suggesting the formation of a company for working railways by contract, and recommending the inventors and patentees of the various modes of atmospheric railway propulsion to join issue for testing the respective merits of their plans. As one of the public who has suffered from the present mode of working the railways, I should like to see the system changed for one less expensive in construction, cheaper in its working, and safer and pleasanter for the public to travel by, which I believe, with some of the most eminent engineers, the atmospheric system will prove to be, when fairly tested. The question, then, for the public to be satisfied about is which of the systems now before them is the best, or whether there should not be a combination of some parts of each? No doubt each inventor and patentee thinks his own the very best; if so, they can have no rational objection to a fair trial on a complete working scale of sufficient extent to remove all doubts. From the conversations I have had with Messrs. Clarke and Varley, Messrs. Cunningham and Carter, and with Mr. John Weston and the British Inventors' Protecting Company, in respect to their plans for the atmospheric system, I believe all of these gentlemen would be willing to submit to such a trial, and the result would at once decide the question, and save the public from much loss, which many may be inclined to hazard in supporting either of the systems as a rival speculation. If the ideas which you have so ably set forth be entered into by the parties named, and a respectable body of directors chosen for the purpose, I shall cheerfully subscribe to the undertaking, and I have no doubt that thousands of others will do so likewise.—Homo: *London, June* 8.

COPPER SHEATHING.

Sir,—However desirous I may have felt to keep up this correspondence, we cannot expect the practical smelters to do so, unless they think it for their interest. My feeling was (as it is still), that a radical change in the smelting process is imminent, which will render valueless the secrets of manipulation in the present course of operations; and that it is, therefore, important for the smelter's knowledge to be in advance of his art, that he may be ready to take advantage of any suggestions or observations, and able to check any crude notions, or recommendations, which may come in his way; nor do cheapness and facility of production appear to me the only requisites, believing it not less important to him to make the *most* of his "surplus," by being able always to regulate, or at least to recognise, its composition, and make it do *good*, instead of *harm*, by appropriating each parcel of copper to the purpose for which its alloy is suited—very pure copper being but little required, but the quality of the alloy being generally of great importance, and in few cases more than in sheathing.

With this view, I attempted to strike light into the subject, by collision of different practical opinions, and collection of isolated facts and observations for contrast and comparison, offering to bear part in the discussion, by bringing forward analyses, laboratory experiments, and chemical explanations and inferences, *as the occasions called for them*; and I am much self-deceived if I am in the smelters' debt on that score. My paper now rests, as I write, upon a set of tables of 93 analyses of coppers, in different grades of purity and alloy—such a collection as has, perhaps, not fallen within the opportunities of any other chemist, since analyses have been practised and taught systematically. Of these, 25 are of sheathing, of which the greater number are by my own hand. Besides these, are 200 or more (I have not counted them) experiments—chemical, chemico-mechanical, and electro-chemical—on the wear, waste, and physical properties of varieties of sheathing: the whole together not, of themselves, decisive of the main questions; but not unsuited to aid the collision of opinions, and comparison of isolated facts, in eliciting the needed intelligence.

And, however, much disappointed hitherto, my contributions are still ready, if required, but under a condition called for in the progress of the correspondence—namely: that the advances, henceforth, come from the smelters—they not expecting me to answer any further questions, unless accompanied by an answer, of equal value and importance, to some of the inquiries in my previous letters; nor is it by *general* questions that such progress is to be expected, but by working up *step by step* until the uncertain parts of the principles of smelting are laid open, and the light of science thrown into every dark corner. Private information is not very difficult to obtain; but its conflicting, and sometimes indefinite, character, shows the need of comparison and discussion. J. Prideaux.

Plymouth, June 13.

THE SMOKE NUISANCE.

Respected Friend,—In a former letter published in thy columns, I stated that I had found, by experiment, that an efficient plan for increasing the draught in a furnace was to place boiling water under the bars, in order to give a supply of steam. I understand that the use of steam in furnaces is included in Kymer and Leyton's patent; but the steam is driven with air through the fire, by means of the blast, a most efficient plan I have no doubt, and one which could be universally adopted without difficulty. In Liverpool many manufacturers have been fined repeatedly 5*l*, for allowing smoke to escape in the atmosphere; but those fines have not yet produced any great result in diminishing the nuisance, as most manufacturers assert that to consume the smoke is an impossibility; and, indeed, so many worthless plans have been tried, that it is hardly astonishing they have arrived at this conclusion. The fact is, that the Legislature takes upon itself to condemn the manufacturers to consume the smoke, while the work of proving the practicability of so doing is left to a few individuals, who find great difficulty in convincing manufacturers of the efficiency of their plans, or can only do so at considerable expense to themselves, such as creating furnaces in different towns, and allowing the plan to be seen in operation; and even then the difficulty does not cease, as the patentee has to encounter the opposition of a host of interested persons, who may do all in their power to depreciate the value of the invention, while the manufacturers may not always judge for themselves, but rely on the judgment of others; besides, they do not apparently feel interested in the subject, any farther than to avoid the penalties. Until the Government interests itself in some other form besides imposing penalties, the probability is that the nuisance will not be diminished to any extent. The appointment of a commission of scientific men would, probably, produce other results. John De la Haye.

Liverpool, 6 mo. 12.

ON PYROGEN.—No. IX.

BY JOHN JOSEPH LAKE, ROYAL LABORATORY, GOSPORT.

In the course of these papers, reference has been made to currents of pyrogen assumed to be in constant circulation round the sun, in a similar manner to those known to exist on the earth. The actual speed of these currents we have not at present the means of ascertaining; but it is probable that it is at least that of the spheres on which it is located. The motion of the earth on its axis is 900 miles an hour; and that of the sun, in round numbers, is 4329. Some idea may from this be formed of the rapidity with which these currents move. So far, however, the currents on the surface of the sun are hypothetical. If they really exist, they should produce corresponding effects to those of the earth; and the sun, like the earth, should be an enormous magnet, and develope magnetic properties. The diurnal variations of the magnetic needle, seem to prove that such is actually the case; for they can be traced to solar magnetic influence, which alone affords a satisfactory solution of their cause.

The nature of these diurnal variations, which were first observed by Graham in 1724, appears to be as follows:—About half-past 7 a.m., the needle is at its greatest easterly declination, and then begins to deviate to the west, until about 2 p.m., when it reaches its maximum westerly declination. It then begins to move towards the east, and arrives again at its maximum easterly declination at about half-past 7 a.m. For some time, in the middle of the night, the needle appears to be stationary. The sun is universally allowed to be the cause of these variations; and Canton's theory of their origin is that its heat diminishes the intensity of the electric currents of the earth—that when the sun is to the eastward, the eastern intensity is diminished, and the westerly force prevails; and when the sun is to the westward, the westerly intensity being diminished, the easterly force prevails. But this hypothesis, though very ingenious, is not sound; for, as has been justly observed, it does not explain the cause of the eastward motion that takes place between 2 and half-past 7 a.m.

The sun being a magnet readily accounts for these deflections of the needle. For the rotation of the sun on its axis being the reverse of that of the earth, the currents of pyrogen must flow in the opposite direction, and the effect of this would be, supposing the magnetism of the earth away, to reverse the direction of the needle. Hence, the needle is deflected to the east or west. As the sun approaches the needle, the latter causes it to deviate more and more from the position induced by terrestrial magnetism, until it passes to the other side of the meridian in the afternoon, when the needle turns towards the east, continuing to do so until it arrives again under the direct solar influence in the morning. Thus, although the magnetism of our globe maintains the needle in its northern direction, and prevents the reversal of it by the sun, yet this luminary has considerable influence upon its position. The variations during the summer months, from April to September, is greater than for the rest of the year. This is accounted for by the sun being more vertical in the summer than in the winter, and its influence, being exerted under a less angle, is more powerful.

Should the above hypothesis be correct, a remarkable fact is developed by the needle becoming stationary in the middle of the night—viz.; that the earth arrests the magnetic action of the sun by its thickness, showing that solid bodies do impede magnetic action, though to so small an extent, that under ordinary circumstances it is not perceptible. Another curious circumstance is also worthy of observation as regards the alteration that takes place in the direction of the needle in the middle of the day. The easterly motion ought to commence as soon as the sun passes the meridian; but it does not begin until two o'clock, the westerly motion continuing until that time. Hence we may see that magnetism is not absolutely instantaneous in its effects, and that it requires about two hours for its influence to pass from the sun to the earth, in which respect it resembles light, though its speed is much greater. The cause of the easterly variation continuing to prevail through the night instead of changing to the west, after the sun passes the meridian at midnight, appears to be, that the relative position of the needle as regards the sun is reversed by the revolution of the earth on its axis, the top of the needle being turned to the sun during the day, and the bottom during the night. Hence, what would have been a westerly movement during the day becomes an easterly one during the night.

I have sometimes observed an effect in the clouds that seems to result from solar electricity. It is only to be witnessed occasionally, when the atmosphere is in a clear, dry, undisturbed state, as a horizontal cirro-stratus, sometimes more than one, following the course of the sun. When it is in the east in the morning, these clouds lay north and south in the east, and follow it round, until at noon they lay east and west in the south, and in the evening north and south in the west. It occasionally continues through the night, the cloud at midnight being east and west in the north. In one instance, when the weather was very settled, and there were several cirro-strati, they followed the course of the sun in this way for two days consecutively. This can only result from the action of the sun, and as it is scarcely probable that it arises from gravitation, and the only other power that we are at present acquainted with that could exert such an influence from so remote an object being electric, it seems to be only to this that the appearance can be ascribed. May it not result from the particles of vapour floating high in the atmosphere becoming electro-polarised by the action of the sun as it passes over them?

The Diamond.—Interesting as is this queen of gems to all, and although they are exposed in dazzling quantities in all our jewellers' windows, our readers will be startled when we inform them that the art of cutting and polishing diamonds is almost unknown in London—we may say England. Looking at the abundance of working jewellers, setters, and lapidaries in the Clerkenwell and St. Luke districts alone, considering the great artistic skill to which our artisans have arrived in every branch of mechanism, and the perseverance and enterprise which have ever marked their progress, this absence of the art of cutting and polishing diamonds is singular. We believe there is but one individual who follows this peculiar art—he resides in Harrison-street, Gray's Inn-road, where the family was originally established by the eminent firm of Storr and Mortimer, the gold and silversmiths, and jewellers, of New Bond-street, who erected very expensive machinery for the business. The Dutch have for ages almost monopolised the diamond cutting trade of Europe, and so expert are they, that on showing them a rough diamond, they will tell to the greatest nicety what will be its exact shape when cut, and almost to the hundredth part of a grain what the polished gem will weigh. It may, therefore, be naturally supposed that any rough diamonds which may come to this country are sent to Holland to be cut and polished. The merchandise here, however, in diamonds is with them principally in a finished state. Diamonds are found of very different colours to what is generally believed, not only are some pure colourless crystals, but yellowish white, grey, ash grey, bluish grey, yellow, and greenish grey, indigo blue, passing into red, rose red, clove, and other shades of brown, asparagus, leek, and mountain green; and Möhs, in his description of Von der Nüll's cabinet, mentions a greyish black diamond, the rarest of all. It was first thought to be an inflammable substance, by Boetius de Boot, in 1609. In 1694 experiments were made by Boyle, which proved that the diamond, although the hardest of minerals, was combustible. Numerous experiments by able chemists since have led to the same belief, but it was left for our own illustrious countryman, Sir H. Davy, to prove, by the galvanic spark, that the diamond is pure carbon.

Consumption of Smoke.—All who have, for a few years, been acquainted with the towns of Manchester and Salford must have noticed a marked change in the purity of the atmosphere. Instead of the dense volumes of black smoke vomited forth by a thousand chimneys of steam-engines, until the air was thoroughly impregnated with soot, begriming clothes, goods in shops, and penetrating every room, the atmosphere is now comparatively clear, and the factory chimneys present a totally different appearance in the quality of the vapour they now distribute. This has been brought about by the authorities under the corporation, who are empowered, by their local Acts, to enforce the application of those known means for the prevention of the emission of smoke which are easily applicable. Among these is a plan patented by Messrs. J. and W. Galloway, of Knott Mill Iron-Works, which has proved highly successful wherever it has been applied; and upwards of 300 boilers are said to be fixed on this principle in the neighbourhood. The construction is simple; the boiler is cylindrical, and is furnished at the front, extending the length of two sets of fire-bars, with two distinct flues, having a water space between them. These flues then gradually converge into one central flue, which traverses the remainder of the boiler. Each grate is fired alternately, so that the dense smoke, unconsumed carbon, and vapours, which pass from the newly applied coal, rush over the incandescent fuel in the other grate, and are consumed in passing over the bridge with the vapours from both fires; by the time the last made-up fire is clear the other will require firing, and so on alternately. It is stated that, as a general average, there is a saving of 30 per cent. in coal; and Messrs. Cooke, of the Oxford-road Twist Company, have six large boilers fitted on this plan, by which 70 tons of coal per week performs the same work as 100 tons under the old system. In some cases, Messrs. Galloway introduce a series of vertical tubes between the upper and lower surfaces of the back flue, which is said to considerably increase the duty of the boiler.

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